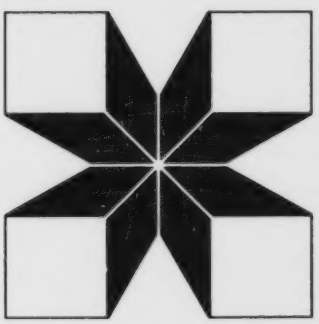
MINISIS USERS' GROUP MEETING 1988

RÉUNION DU GROUPE DES UTILISATEURS DE MINISIS 1988

IDRC
CRDI
CIID



CANADA

IDRC-MR250e.1

MINISIS 1988

The International Development Research Centre is a public corporation created by the Parliament of Canada in 1970 to support research designed to adapt science and technology to the needs of developing countries. The Centre's activity is concentrated in six sectors: agriculture, food and nutrition sciences; health sciences; information sciences; social sciences; earth and engineering sciences; and communications. IDRC is financed solely by the Parliament of Canada; its policies, however, are set by an international Board of Governors. The Centre's headquarters are in Ottawa, Canada. Regional offices are located in Africa, Asia, Latin America, and the Middle East.

Le Centre de recherches pour le développement international, société publique créée en 1970 par une loi du Parlement canadien, a pour mission d'appuyer des recherches visant à adapter la science et la technologie aux besoins des pays en développement; il concentre son activité dans six secteurs : agriculture, alimentation et nutrition; information; santé; sciences sociales; sciences de la terre et du génie et communications. Le CRDI est financé entièrement par le Parlement canadien, mais c'est un Conseil des gouverneurs international qui en détermine l'orientation et les politiques. Établi à Ottawa (Canada), il a des bureaux régionaux en Afrique, en Asie, en Amérique latine et au Moyen-Orient.

El Centro Internacional de Investigaciones para el Desarrollo es una corporación pública creada en 1970 por el Parlamento de Canadá con el objeto de apoyar la investigación destinada a adaptar la ciencia y la tecnología a las necesidades de los países en desarrollo. Su actividad se concentra en seis sectores: ciencias agrícolas, alimentos y nutrición; ciencias de la salud; ciencias de la información; ciencias sociales; ciencias de la tierra e ingeniería; y comunicaciones. El Centro es financiado exclusivamente por el Parlamento de Canadá; sin embargo, sus políticas son trazadas por un Consejo de Gobernadores de carácter internacional. La sede del Centro está en Ottawa, Canadá, y sus oficinas regionales en América Latina, Africa, Asia y el Medio Oriente.

This series includes meeting documents, internal reports, and preliminary technical documents that may later form the basis of a formal publication. A Manuscript Report is given a small distribution to a highly specialized audience.

La présente série est réservée aux documents issus de colloques, aux rapports internes et aux documents techniques susceptibles d'être publiés plus tard dans une série de publications plus soignées. D'un tirage restreint, le rapport manuscrit est destiné à un public très spécialisé.

Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.

IDRC-250e, f
January/janvier 1990

PROCEEDINGS
COMPTE RENDU

10th ANNUAL MEETING
MINISIS USERS' GROUP

10e REUNION ANNUELLE
GROUPE DES USAGERS DE MINISIS

10a REUNION ANUAL
GRUPO DE USARIOS DE MINISIS

MUG '88

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
LE CENTRE DE RECHERCHES POUR LE DEVELOPPEMENT INTERNATIONAL
CENTRO INTERNACIONAL DE INVESTIGACIONES PARA EL DESARROLLO

OTTAWA, CANADA

SEPTEMBER 12-16, 1988
DU 12 AU 16 SEPTEMBRE, 1988
SEPTIEMBRE 12-16, 1988

Material contained in this report is reproduced in the original language of presentation, English, French, or Spanish. It is produced as submitted and has not been subjected to peer review or editing by IDRC Communications Division staff. Unless otherwise stated, copyright for material in this report is held by the authors. Mention of proprietary names does not constitute endorsement of the product and is given only for information.

Les textes de ce rapport sont reproduits dans la langue originale de présentation, le français, l'anglais, ou l'espagnol. Le rapport a été reproduit tel qu'il a été soumis, sans examen par des pairs ni révision par le personnel de la Division des communications. À moins d'indication contraire, les droits d'auteur de ce rapport appartiennent aux auteurs. La mention d'une marque déposée ne constitue pas une sanction du produit; elle ne sert qu'à informer le lecteur.

90-03208/

MUG 88 ORGANIZING COMMITTEE
GUM 1988 COMITE D'ORGANISATION

Ellen Ruygrok...IDRC (Computer Systems Group)

Mary Campbell...IDRC (Computer Systems Group)

Bob McKercher...IDRC (Computer Systems Group)

Richard Palmer...IDRC (Computer Systems Group)

Ed Brandon...IDRC (Computer Systems Group)

Françoise Massin...IDRC (Computer Systems Group)

and the rest of the Computer Systems Group

Virginia Ballance...National Library of Canada

Judy Prindiville...National Archives of Canada

McLeod Bishop Systems

Ron Davies...Computer Consultant

Julie Lalonde and Lyse Lavictore...IDRC (Conference Section)

Maureen Sly...IDRC Library

Marg Langill, Angie Anton, and Margaret MacKenzie...IDRC (Travel)

Michèle Wilson...IDRC (Translation)

Marc Gohier and Steve McEwan...IDRC (Administration)

MUG 88/GUM 1988

TABLE OF CONTENTS/TABLE DE MATIERES

OPENING SESSION/SEANCE D'OUVERTURE
WELCOMING ADDRESS
IVAN HEAD, President – IDRC 1

OPENING REMARKS, Tenth MINISIS Users' Group Meeting
MARTHA STONE, Director, Information Sciences Division — IDRC 4

SESSION 1/1re SEANCE
THE MINISIS PROGRAMME FOR THE FUTURE
Terry Gavin, Computer Systems Group, IDRC 6

Outreach Activities
Nick Cop 10

MINISIS Version G
Mary Campbell 11

SESSION 3/3e SEANCE
MINISIS Version H
Richard Lee 16

Schedule of Events 21

MINISIS in USAID
Mr. Lee White 24

SESSION 4/4e SEANCE
Arabic Character Set
Mr. Gasmi 31

Communciations Software Packages
Ms. Wittaker 38

SESSION 5/5e SEANCE
Multi-lingual Integrated Library System
Ms. Ballance & Ms. Barkworth 44

SESSION 6/6e SEANCE
Session for MINISIS Trainers
Julius Manalo 47

Management of Large Databases
Ms. Thompson 50

SESSION 8/8e SEANCE
Demonstration of the IMF Circulation System
Ms. Turner 55

SESSION 9/9e SEANCE
Integrated Library System
Ms. Chun 71

SESSION 10/10e SEANCE
CCA's Use of MINISIS
Mr. Subitowski 78

SESSION 12/12e SEANCE
UPB
Ms. Bernal 82

UTFSM
Mr. Campos 100

CONACYT
Mr. Del Moral 108

SESSION 13/13e SEANCE
IDRC Library and Mailing List Demonstration 115

SESSION 14/14e SEANCE
Use of CDS-ISIS in MINISIS User Group
Mr. Pang 119

Bar Code
Mr. Easton 120

SESSION 15/15e SEANCE
MARC Applications
Mr. Hopkinson 130

NCAER
Mr. Kool 135

AVRDC
Mr. Hwang 139

SNDT
Mr. Naidu 142

SESSION 16 /16e SEANCE

Chinese Character Set
Richard Lee 148

System Management
Richard Palmer 155

MALMARC-MINISIS
Mr. Pang 163

SESSION 17/17e SEANCE

Interface Between MINISIS and Trilingual Laser Publishing Package
Mr. Awwad, Mr. Abaza 178

SESSION 18/18e SEANCE

Circulation, Acquisition, Periodical with a demonstration of AGRALIN
Mr. Leemereize, Mr. Hoolboom 185

Programming Interfaces in C, Pascal, and COBOL
Richard Lee 188

SESSION 19/19e SEANCE

Legal and Legislative
Alvani Silva 197

CLOSING SESSION

Workshop Summaries 206

Version II Roundtable 223

WELCOMING ADDRESS
IVAN HEAD, President – IDRC

It is of particular pleasure for me to welcome you all here to Ottawa and to give the initial speech at this very important conference. First and foremost, I would like to express my gratitude to the delegates for their dedication to the MINISIS Group. I delight at the numbers that are here this morning; all the more so when we cast our minds back and realize that at the first meeting of the MINISIS Users' Group which was held at IDRC on November of 19 9 the group was small enough to fit comfortably around the Centre's board room table; it's a large table but the contrast is nevertheless apt. Of the twenty-one participants in that first meeting, only ten were MINISIS Users, the rest were members of IDRC staff. I hope there is not more than ten IDRC staff among you this morning otherwise the figures all become out of whack.

Since that modest beginning, the meeting has travelled the world as member organizations from different continents acted as hosts to the Users' Group, a different country each year. We have appreciated the hospitality of our past hosts but we at the Centre have looked forward eagerly to the opportunity to bring the Users' Group meeting back home to Ottawa to celebrate the tenth anniversary of the first installation of MINISIS and to look forward together to the next decade or more of the MINISIS program. Today I'm delighted to welcome 150 delegates from 80 MINISIS sites in 32 countries to this milestone event.

Le Centre de recherches pour le développement international est une société de la couronne créée en 1970 par un acte du parlement canadien dans le but de stimuler et appuyer les recherches techniques et scientifiques des pays en voie de développement. Un des secteurs d'activités pour lequel le CRDI offre son aide financière et technique est celui des systèmes d'information.

La création d'un programme traitant des sciences de l'information est certainement une example démontrant l'effort apporté par une organisation d'aid d'établir un programme au sein d'une division de vision, ayant pour objectif de soutenir et d'améliorer la gestion de l'information pour le développement. L'usage des ordinateurs pour gérer l'information a toujours été une composante importante du programme de la division des sciences de l'information. Dès sa conception, cette division a réaliser l'importance d'acquérir elle-même sans intermédiaire l'expérience de la techonologie des ordinateurs afin de pouvoir en discuter en connaissance du cause avec les pays en voie de développement qui manifestaient un intérêt pour cette nouvelle technologie.

Our objectives therefore have been twofold: to gain experience in automation management in order to carry out our mandate to work with Third World countries and secondly to meet our own in-house automation needs. We looked in the first instance for an automated system which could be adopted by major international agencies and could accommodate internationally accepted standards and practices for management and exchange bibliographic data. As all of you know, the system that was chosen in 1973 was ISIS, the Integrated Set of Information Systems developed by the ILO, its International Labour Office.

The ISIS system successfully met our needs to automate our library operations and to permit us to gain experience in library and documentation centre development but the results were of use only to developing country organizations with large scale then mainframe computers. At the time that IDRC was considering the need for a computer system that would be more suitable for use in developing countries, the computer industry was entering a new period of technological advance. Sophisticated data processing capabilities formerly associated only with expensive mainframes were now becoming available on what were known as minicomputers. Those new mini-computers offered an alternative, cheaper solution in comparison to the larger scale systems.

On March 15, 1976, the Centre's Board of Governors, the International Board representatives as you know of eleven different countries, approved the proposal of the Information Sciences Division to design a system compatible with ISIS for information storage and retrieval and library management using mini computer equipment. Manufacturers of hardware were invited to submit proposals and the Hewlett Packard 3000 mini computer was chosen as the machine that best met our criteria for performance, reliability and as important as either, availability in the developing world. A name for the system was chosen to identify it as a member of the family of ISIS-derived database management systems.

Within less than two years a small and dedicated development team working in-house had designed, built and implemented MINISIS. The first user was the IDRC library where MINISIS was installed in January, 1978. The rest of the story is very familiar to most of you. From six installations that year the MINISIS User community has grown to 272 installations in 55 countries. I hope all of the flags are found in the room this morning. With the enhancement of MINISIS to accept many languages and scripts, a corresponding decrease in the cost of the hardware, we expect to see the number of users continue to rise.

But MINISIS is now reaching a critical stage in its evolution which adds to the importance of this meeting. Ten years is a long time in the life of a computer package. We are witnessing the emergence of another major breakthrough in computer technology with the presence of increasingly powerful microcomputer systems and the advancement of related technologies such as CD-ROM. The MINISIS user community and the developing world both expect MINISIS to meet these challenges and remain current with new opportunities in information management.

At the same time, MINISIS could be in danger of becoming a victim of its own success because, as the User Group grows, its needs for support and assistance are expanding beyond the capabilities of IDRC's resources alone to meet them. For these reasons in 1986 the Centre engaged a consultant to review and analyze the MINISIS program and to recommend strategies for its future.

In his report, the consultant advised bluntly that IDRC either"...really support in the future, expand and promote the MINISIS program or get out of the business". "A middle road", he said, "is a certain slow death, a waste of Canadian resources, and a cruel deception for developing countries". Bluntness is often employed in Canada and that is a good example.

I'm happy to confirm to you that IDRC chose to renew and reaffirm its commitment to its ongoing support of MINISIS as a vital component of the program of the Centre through the Information Sciences Division. The Centre's international Board enthusiastically accepted a strategic plan drawn up by the Division which will guide the MINISIS program through the next decade. This plan of action, as significant as the original MINISIS program of development, proposes strategies for the decentralization of the dissemination and support of MINISIS as well as for its technical evolution to a system which will run on a variety of hardware.

The story of MINISIS however is not just a story of IDRC's support for the program. One of the most vital components in its success and one of the original and unique ingredients has been the cooperation, the generosity and the esprit de corps displayed by the members of the MINISIS user family, by you. No MINISIS user is alone. Through contributions of their own software, articles to the newsletter, advice and shared experiences plus their availability for consultancies and training programs, the more experienced members of the Users' Group have helped to ensure that other members are able to exploit the possibilities of the system to the fullest. I look forward with pleasure to increase participation on the part of other users in all aspects of MINISIS activities. I'm confident you will work together with the Information Sciences Division staff to ensure that MINISIS will remain a viable software package for the future.

Over the years the meeting of the Users' Group, not only the annual meetings of the group as a whole, but those of the many splinter groups that have sprung up in various regions, have provided an opportunity for users to share the knowledge and mutual support as well as to help IDRC make decisions that shape the future of the MINISIS system. My colleagues and I look forward to continuing in this remarkable association and regard this meeting as an important element. Best wishes to you all. Thank you.

MARTHA STONE

Director, Information Sciences Division — IDRC

Good morning, bonjour, je suis Martha Stone, Directrice de Division des Sciences de l'Information. Due to conflicts of scheduling I was unable to participate in last year's meeting in Mexico or the year before in Singapore, so I am as delighted to be able to welcome you as my President and Terry to the tenth meeting of the MINISIS Users' Group in Ottawa.

It is difficult for me to comprehend the size of the MINISIS family -- to realize that of 289 licensees and sub-licensees we have 150 participants from over 30 countries. I'm indeed proud to be amongst you this week. Just as when IDRC hosted the first meeting in 1979 we are indeed in an exciting time of change with respect to MINISIS developments.

Throughout its evolution, the MINISIS activities have complemented the overall objectives of the Information Science Division. These objectives within the mission to provide access to information to researchers, policy-makers and practitioners in developing countries, are to build indigenous capacity within developing countries for the effective management and application of information, to improve systems, services and tools for managing and using information relevant to development research and change, and to foster cooperation and coordination and development research by sharing information. At the same time MINISIS, within those objectives, through the network of commercial distributors, has proven useful to the community of users within industrialized countries as well.

The MINISIS activity of the Information Sciences Division is only a part of the story. It is a small, albeit important, component of our Information Sciences program. Very briefly I would like to put it into perspective for you. I know that during this week, and the week following for some of you, you will have an opportunity to meet many of our colleagues in the other part of the Information Sciences division. I want to just mention where the Information Sciences division fits within the organization of IDRC for there are seven other program areas, addressing issues in the fields of agriculture, food and nutrition sciences; health sciences; the social sciences, focusing on economic development, and social issues; earth and engineering sciences; communication, the dissemination of information, the dissemination of research results and the fellowships and awards division. The Information Sciences program is one of the programs within this context.

IDRC is unique among development and aid agencies because it has stressed the role of Information Sciences from the beginning and the important role that it plays in the development process. The Division's program over the past 17, 18 years has been guided by four basic principles.

Firstly, that the volume of scientific literature is so enormous that no developing country has the resources to build an independent and comprehensive national information system. Thus any attempt to address Third World information needs must be based upon resource sharing and cooperation. Secondly, for any country, the most important information is that which has been generated by that country. Thirdly, a developing country needs to have the skills to acquire from the rest of the world those pieces of information that it has identified as important to its development process. It cannot rely upon foreign sources to make the selection on its behalf. And finally, the interconnection of libraries and documentation centres and cooperation can lead to more rational use of resources and the avoidance of waste.

You will hear more about the structure of the Information Sciences Division during the upcoming days, but I do want to indicate that we are divided into five broad sections and most of those who are responsible for those

sections are in the audience today and you will have an opportunity to meet with them and learn more about their program.

You are familiar with the Computer Systems Group; the Associate Director is Terry Gavin, and this group is responsible for the development, distribution and support of the MINISIS software.
The other groups are the library, which serves the Centre as a whole by providing information and library service as well as training and advice through the IDRC staff, recipients of IDRC support, and Canadians involved in governmental academic and voluntary institutions concerned with Third World development.

Another section is the Socio-Economic Information. Shahid Akhtar is in the audience this morning and he is the Associate Director for that program, and this group supports projects in the area of economic and social information systems, information structure development, education, language communication, and health and population.

The Science and Technology Information section concentrates its activities on the support of Agricultural Information Systems and the Program Officer for that program is here this morning; Industry, Technology and Shelter, Earth and Marine Sciences, and that Program Officer is also here, as well as Science and Technology Information Systems.

The last group is the Information Tools and Methods which supports projects to assist developing countries to acquire, manage, adapt, develop, and test appropriate information handling tools using a variety of technologies and methodologies. They support projects in the area of telematics, informatics, cartography, remote sensing, and other storage technologies.

As I've mentioned this is just a quick run through of the organizational structure of the Information Sciences Division to let you know exactly where the MINISIS group fits within the family of Information Sciences.

I am confident that the evolution of MINISIS will be a major topic of discussion this week. As in the past, and it has been mentioned this morning, my Division looks forward to receiving your input on the future direction for MINISIS and we wish to work closely with the User community in the future dissemination and development of the software. Your agenda is full and it only remains for me to wish you success in your deliberations this week. Thank You.

THE MINISIS PROGRAMME FOR THE FUTURE

Terry Gavin

Associate Director

Information Science Division, IDRC

Background

In 1976 the Board of Governors approved a project which led to the development of the MINISIS software. This project evolved into a significant programme activity encompassing software development, dissemination and support. That programme activity is now at a crucial point in its development.

There have been many factors which have lead us to this point of change:

1. MINISIS is now over 10 years old. People have very kindly called it a "mature product". That may be a kind way of saying it is old-fashioned. It is obvious that many aspects of the software, particularly the user interfaces must be modernized.

2. There are an increasing number of users making more and more demands on us, not only for introductory training for new users but also more specialized training for experienced users. The number of users has continued to grow, consistently,at rate of between 20 and 30% per year. The total number of users now stands at approximately 300 installations.

3. As the number of users grows, so do the number of requests for enhancements to be made to MINISIS. We try to accommodate as many of these as possible for the benefit of all users. However, it is sometimes difficult to incorporate some of the very good suggestions because they would radically affect the internal structure of the MINISIS internals or the basic data structures or the performance of the software.

4. Another significant factor is the dramatic change in technology over the last few years. Computers have become smaller, more powerful and cheaper. Storage technology has changed to make it more practical to store full text rather than references and to maintain different types of data such as sound and images as well as text.

5. The last factor which I will mention here is the in-depth review of the Information Sciences Division undertaken by our Board of Governors in 1985 which included a recommendation to explore transferring responsibility for MINISIS.

Responding to these concerns, we contracted a senior consultant to undertake a major review and analysis of the past and present of the MINISIS programme in order to suggest strategies and options for the future of the programme. Based upon these recommendations and upon information collected from the MINISIS user community, the ISD has developed a plan of action, no less significant than the original MINISIS development, which will greatly enhance the dissemination, support and technical viability of MINISIS for the greater benefit of developing countries.

Objectives

The general objectives of these activities are:

1. to be responsive to the requirements of the MINISIS user community by enhancing the software as well as improving its distribution and support in order to meet the needs of users, particularly those in developing countries.

2. to be responsive to the recent and forthcoming changes in technology by enhancing the bibliographic and other textual processing capabilities of the software to provide a more viable, beneficial and up-to-date package.

3. to produce a version of MINISIS which can operate efficiently on a variety of computer hardware including the Hewlett-Packard 3000.

General Plan

Our plan has two different thrusts although they are highly dependent upon each other. One aspect relates to the decentralization of the distribution, training and user support activities of the MINISIS programme. The other relates to significant enhancements in the technical development of the MINISIS software both for the purpose of being responsive to the needs of users in developing countries and for the purpose of preparing for the decentralization of further technical developments and support.

Dissemination and Support

The decentralization of the dissemination and support of MINISIS is being undertaken with project allocations to fund a variety of related activities. The Computer Systems Group (CSG) is supporting the establishment of several national and regional MINISIS Resource Centres (MRCs). These organizations will service a large and growing number of MINISIS installations in a particular country or region, often with a requirement for services in a specific language such as Chinese or Arabic. A MRC will prepare local language documentation and training material, undertake training courses and provide MINISIS support services to the user community in their territory.

There are currently 2 MRCs that have been established. One is located in Beijing at the Scien-tech Information Centre to support users in the People's Republic of China. The other is at the Information and Documentation Centre of the Arab League in Tunis to support the dissemination of MINISIS in Arabic-speaking countries. Two other MRC projects are in various stages of negotiation in India and West Africa.

Our criteria for selecting a country or region for an MRC is based upon a combination of the growth rate of new users and the requirement for specific technical or language skills. When selecting an organization to become a MRC we look at their mandate and capabilities, the existence of a significant MINISIS application, the existence of sufficient human and physical resources to undertake the activities and the recognition the organization has within the country or region from existing and potential users of MINISIS.

A second dissemination and support initiative now underway is the development of MINISIS Resource Person (MRP). This will be an alternate approach used in those areas where it is not yet feasible to establish a full MRC. The capabilities of local MINISIS experts will be strengthened to permit them to conduct training courses and provide basic problem solving support to local users.

We have one project in operation to support two MRPs in Latin America. Patricia Cuellar from Bogota and Enrique Barreto of Mexico City will be conducting a number of initial training courses for new MINISIS users in Latin America during the next two years.

We hope to be able to replicate these types of projects in other countries and regions over the next few years. In an effort to make the MRCs which we help to establish, more self-sufficient, we are now exploring several mechanisms which will redirect the commercial revenue which IDRC receives from MINISIS to these organizations.

Technical Developments

The technical developments which are part of this plan involve working with developing country computer experts to radically enhance the MINISIS software. This will include the migration of MINISIS from the SPL programming language to the C programming language as well as significant improvements in the way in which people interact with MINISIS the way in which they develop applications, and the type of data they can manage.

The results of this activity will be threefold. The MINISIS software will have increased flexibility and additional capabilities to allow users to develop applications more easily. Secondly, with the software being implemented in a more popular programming language, it will be feasible to decentralize the support and further development of MINISIS. Thirdly, the implementation of the software in the C language will make it possible to move the MINISIS software to different hardware including large microcomputers and other types of minicomputers.

Later today, Richard Lee will provide more details of the specific technical developments of MINISIS Version H. Some of the features we will incorporate include:

- specific tools for library management. we hope to be able to provide, eventually, sets of pre-packaged generalized applications in several areas.
- the ability to manage full text and different data type more easily.
- enhanced numeric processing capabilities.
- an applications development language to permit users to construct applications more easily from MINISIS building blocks.
- linkages to larger mass storage devices.
- enhanced interfaces to popular microcomputer-based software.

Development Plan

The implementation of the original MINISIS software was undertaken exclusively within IDRC by a team of three people working very closely together. This environment was instrumental in IDRC being able to produce a good quality product in a short time period. This method of implementation was selected in order to fulfill one of the objectives of the project proposal - "to build within IDRC an expertise in the general area of information systems and data processing, using minicomputers". It is now time to transfer that expertise to organizations that have the capacity to absorb it and have the potential to use the expertise for the benefit of other developing country users of MINISIS.

Several organizations, including some in developing countries, with talented programmers have indicated a desire to collaborate with IDRC in this activity. The most viable proposal is one which has been presented by the Hong Kong Productivity Council (HKPC). They are a long time MINISIS user which also has considerable experience in software development. I am pleased to say that IDRC has recently concluded an agreement of cooperation with HKPC regarding the development of Version H. We at IDRC look forward to working with

them in this endeavour.

Version H.00 of MINISIS is scheduled to be released at the end of 1990. However, it will not include all of the features mentioned earlier. With our available resources we must be realistic in our objectives. We want to provide, by that time, a C language version of MINISIS that will operate efficiently on all versions of the HP3000 and contains sufficient enhancements to be the framework for future developments. We anticipate that, depending upon the assistance we can obtain from other users, MINISIS will be able to operate on hardware other than the HP3000 within a year after that.

Conclusion

The objective of these activities is to produce an information management tool that will allow MINISIS users, particularly those in developing country organizations, to collect and administer, more effectively, information that will enhance their development. It is also the objective of this plan to ensure that the dissemination, support and further development of the MINISIS software is decentralized to the greatest extent possible. We feel that this is the natural next step in the evolution of the MINISIS programme to ensure that it is a relevant information tool for years to come. We look forward to working together with you in taking this giant leap forward.

Outreach Activities

PRESENTATION TO THE OPENING PLENARY OF THE MUG 88

NICK COP

Senior Outreach Officer, Computer Systems Group — IDRC

You've heard Terry talk about the future developments of MINISIS. And, of course, with that, the training and support, which are the primary functions of the Outreach Group, that have to be developed hand in hand with the new software. Also, we have the decentralization of the support and training of MINISIS, through the MINISIS Resource Centres and the MINISIS Resource Persons. They are the ones who will be doing the major share of the support and training of new users and current users of MINISIS. Now we have to ask ourselves, what does the Outreach Group do, the Outreach Group that was so used to going out and doing the installations for all the MINISIS users? Well, not to worry. You'll still see us running around in the field. But we feel that we have to concentrate more on providing training materials, educational materials, and delivery techniques for the MINISIS Resource Centres and the MINISIS Resource People. So, our primary focus is going to be to provide support for those centres.

When we talk about developing new ways of training and using new delivery techniques, we will be looking more at automation systems in education, on developing self-training materials, so that users do not have to rely so heavily on having to have someone from another city or another region fly in to do the training. In that way, the users can also use the training material to provide themselves with their own refresher courses in MINISIS. As well, we are looking at ways to enhance the documentation that is provided to the MINISIS users with the system. We're looking at ways to change the format and, for our own purposes, to develop new production and delivery techniques of the documentation. Perhaps we may integrate the documentation somehow with the MINISIS software itself, to provide some sort of on-line capability for users to look at documentation.

With respect to the documentation and the training activities which we plan to undertake, along with development of Version H, and the development of the MRC's and the MRP's, we of course welcome and appreciate very much the input from MINISIS users. Those really are basically the two main thrusts that the Outreach Group will have in providing support to the users out in the region, through the MRC's and the MRP's.

MINISIS VERSION G

MARY CAMPBELL

Outreach, Computer Systems Group — IDRC

MINISIS Version G has been running in the IDRC Library in production mode and at a number of other MINISIS sites in test mode for the past six months. The release tape will contain, besides the standard MINISIS programs and message files, the documentation, for the first time, in both French and in English. All the documentation now is in page-image format. It can be printed with a program called DOCFORM, which we will also release . When it's printed, the documentation will contain proof-marks on the margin of the page to indicate new or revised text. You can elect to print the whole document or only the new and revised pages. We've been talking about this possibility for a long time and we are very pleased to announce that we are finally able to produce all of the documentation in such a way that you can tell what is new text and what is not changed since the last release. You may have seen the release newsletter, which will be distributed with the Version G tape, on the table in the lounge outside of this hall. A lot of the information that I'm going to give you now will be covered also in the release newsletter. This is just a summary of what's new, of what to expect when you get the tape.

The major new feature of Version G is the data dictionary. It's a program called Datadict, which will replace the Datadef processor. Essentially, the process of defining a database will remain the same, except that, when you activate the DB command the Datadict processor will go into block mode, and present you with a series of screens rather than engaging you in the line-mode dialogue that Datadef used to do. But in fact, the messaging prompts are the same, they'll be familiar to you. Internally, the database definition itself will be stored in a MINISIS database - a radical departure from the way data definitions were stored in the past. This database of databases will contain all of the data definitions in an account. And this strategy for storing data definitions, we hope, will provide cross checking between data definitions, and maintain consistency between databases, allowing less potential for errors and problems when you're creating a data definition. Because your data definitions are themselves in MINISIS format, this will permit you to obtain statistics on applications through the use of Query, Index, and Print. We've provided some examples with Version G. The Data dictionary will compile data definitions in the source database, and produce them in object form. The other MINISIS processors will access the object form of the database definition when you open a database. We hope that this will reduce the time required to open a database. Of course, the database, which contains the definitions of your MINISIS databases, must itself have a data definition. We'll release the compiled form of this data definition on the Version G release tape, but the source data definition will remain at IDRC. We've been asked if we will release the source data definition on request. Our answer is: yes, we can do so. But in that case, we can't continue to provide support to you. If you change the system data definition itself, we feel that we're not in a position to continue to support your application.

Another significant new feature in Version G that people have been waiting for is the extension of the MINISIS record size limit for all databases to 64,000 characters. In order to accommodate this enhancement, it was necessary to rewrite the Entry processor. In fact, instead of rewriting Entry, we chose to take this opportunity to implement the long-requested merge of the Modify and Entry programs into a single processor called Update. It's, in effect, an enhanced version of Modify, with the added ability to enter a new record.

So it will still look quite familiar to you. It will be similar to be running Modify, but you will be able to enter a record as well as to modify one. For those people who prefer to assign data entry and modification tasks to different operators at their site we have added separate entry points, which, when implemented, would permit an operator to enter a new record but not to modify an existing one, and vice versa. So, in effect, Update can still be run as though it were two programs, Entry and Modify, from the user point of view.

Update will interface with the V-PLUS forms management program FORM-SPEC. It will call V-PLUS forms for screen formated block mode entry and modification that you can design using the FORM-SPEC program. Update also works in character mode, as did Modify and Entry. For those of you who aren't familiar with the V-PLUS package, including the FORM-SPEC program, I should mention that it's part of the fundamental HP operating system available to all HP users. If you choose to write records through V-PLUS form, using Update, you'll be able to take advantage of a lot of opportunities that the V-PLUS program offers, for data checking; for pattern matching; for different kinds of validation; and automatic entry of default values. As you can probably note in the agenda, we'll be giving demonstrations of the Datadict processor, the Update processor, and some new features in the Query processor at various times throughout the week.

Another area to which we have directed our attention is that of the problems posed by larger databases. As applications grow, users have found that they have been coming up against various limitations, both in MINISIS and in MPE. We've made a concerted effort to find solutions for these limitations, particularly a work-around for the limits that MPE imposes on master file sizes, and extensions of both the physical size and the posting-storage capability of inverted files.
We've also implemented such features as a check point restart feature in invert.

If your inversion job stops, or if you are forced to stop your inversion job, you don't need to begin it again from the beginning; you can continue at a later time at the point where you stopped. And we've added an option to speed up Index, when the output from Index is going to be used for batch inversion.

A new utility called Stopconv is also going to be available to convert a KSAM stopword file to a fast-access file. We've found that that makes Index considerably faster when performing stopword elimination.

Users of Micro CDS-ISIS will be pleased to know that MINISIS will generate an ISO file in a format that can be accepted by Micro CDS-ISIS without any further programming or reformatting. We've also been working towards the development of a set of high-level intrinsics and exit interfaces which will be callable by COBOL and PASCAL, as well as by SPL. We expect that they will simplify the task of writing MINISIS programs in exits. The new intrinsics are documented in the Application Programmers' Guide. MINISIS will support both the low-level intrinsics, those intrinsics that have been used to support MINISIS from the beginning until now, as well as the new higher level intrinsics that can be called by COBOL and PASCAL. Some of the processors in the MINISIS system in G, particularly Update, Isoconv, and Batchin will call the new intrinsics; others will continue to use the old ones. I should point out, however, that if you want to take advantage of the Version G capability to process records greater than 4,000 characters, if you've written a program which calls the Augment intrinsic, you should replace Augment with its higher level equivalent. Augment has not been updated to handle records greater than 4,000 characters.

Because of the difference in the way that the data definitions will be stored, there is going to be some conversion necessary before you can run Version G. The major task will be to convert your data definitions to Version G format. We will distribute a set of programs on the release tape which will do this for you. These programs will load your current database definitions in each account from the DB file into the Data dictionary database, and compile the data definitions into object code, so that as soon as the program is finished you can run MINISIS in Version G.

Other conversion tasks that will be necessary: anyone who runs a batch job in French should take note that some command have been changed. Your batch job files must be updated accordingly. Any batch job which refers to the old Datadef and Modify programs must also be changed, since these programs no longer exist: they've been replaced by Datadict and Update. And for MARC users: because of the enhancements added to the MARC interface, you must rebuild your MARC table file before you can use Version G. The Release Newsletter will document all of these steps.

If you haven't mounted Version F.2 yet, you can convert from Version F or Version F.1, to Version G, provided that you follow the rules for conversion from F to F.1 and from F to F.2, as described in the release newsletters for these versions. A word of warning: as a result of a change to Isoconv, ISO tapes in block form produced in G will not be accepted by MINISIS F.2. There's no problem for blocked files, going from F.2 to G, or for unblocked files going in either direction, but, if you install Version G and you intend to send an ISO tape to another user, please check whether the user is running under F.2 or G before you make your tape.

As usual, the user-contributed library is distributed on the release tape in the MinLib account. We haven't been able to test all of the contributions under G. We've tried to indicate, in the User Lib database, which is found in the user-contributed library, and in the release newsletter, which contributions have been updated with new high-level intrinsics, which contributions we know will run under G whether they have the high-level intrinsics or the low-level intrinsics, and which ones we haven't been able to test. Contributions from users other that IDRC will not contain the high-level intrinsics. Such programs as CARDEX, CHECKIN, and GENDATAE will run under G, but wouldn't be able to handle records greater than 4000 bytes. If you've contributed a program to the user-contributed library, under an earlier version, and you want to update your program to be compatible with G, please let us know.

We hope that you'll like Version G. We're sure that you'll have lots of comments and suggestions; we'll be pleased to hear all of them. We've tried to correct all of the known bugs, but there are still some outstanding. In some cases, we were not able to duplicate the bug at IDRC, therefore we could not tell whether or not it was eliminated under G. If you've submitted a problem report and you don't find it identified as fixed when you find the release newsletter, please try to reproduce the problem under Version G, and let us know the results.

We've also tried to implement as many enhancement requests as we could under the constraints of time and the present structure of the system. If you've requested a new feature which we couldn't add to Version G, please don't despair. Ask us again, and we may be able to accommodate it in Version H.

(W. Merkis): Witold Merkis from Macleod-Bishop. I was wondering whether there were any plans for releasing subsequent versions of G before H, or whether G was going to be the last version before H? It is going to be two years.

We haven't got any specific plans for a G.01, but I see no reason to say that there won't be. If we find that there is a need for a G.01, it's very possible that we will release at least one intermediate version before Version H. We do realize that two years is a long time. But, if there is an intermediate release between G and H, there won't be any major new enhancements. I suspect that it will probably only contain fixes to bugs.

PRESENTATION TO THE OPENING PLENARY OF THE MUG 88

RICHARD LEE

Future Systems, Computer Systems Group — IDRC

Let me begin with the motivation of the Version G. As Terry mentioned this morning, MINISIS has been operational for the past ten years now, and has become a mature product. There are several reasons why we think it's time we move on to a new system. We found it has become very difficult to incorporate new features in the system, and were encountering some efficiency problems, because things didn't fit very well, and another thing is that, as most people are already aware, HP announced, in the past year, the new HP 3900 series computers, which have a completely new system architecture, compared to the HP 3000 system. Some existing MINISIS users have already acquired the new system and they have been using MINISIS. The new machine is capable of emulating the HP 3000 environment, but there's overhead on the new computers and MINISIS doesn't take the full advantage of the new machine architecture. We would like to come up with a version of MINISIS which will run efficiently on the 900 series computer. And also, now and then, we hear people ask whether MINISIS will be able to run on other hardware, because some people have already selected their hardware. But unfortunately, MINISIS was developed using a language called SPL, which is only available on the HP 3000 computer. That means there's no way you can port the system to other hardware. So one of the objectives of Version H is to try to build a version of MINISIS which can be easily ported to other machines.

There have been a lot of new developments in computer science, and we want to take this opportunity to keep up the new technology like having a better user interface and interfacing with mass storage such as CD-ROM. Most of our users use MINISIS for library applications and managing information centres, people also use MINISIS for other applications, and when we install the new system for some of the users, they expect IDRC to provide a turnkey system, instead of a generalized system. So, for Version H, we wanted to come up with something which would allow the user to develop their applications more easily and more quickly.

As Terry mentioned this morning, in 1986 we had a senior consultant to do a study on the future plans of MINISIS, and from his report, he had several recommendations. One of the recommendations was to rewrite MINISIS in a portable language. We have been getting a lot of feedback from the users, in enhancement requests. We've decided to develop a Version H. I will give you some outlines of the features which we propose for Version H. When we look closely at the existing system, we still find lots of the existing design quite sound, and we are not thinking of redesigning a new system. So Version H is still largely based on the current design of MINISIS. However, the new features will be incorporated into Version H as well. I'm just going to list it now in point form.

As you know, MINISIS employed the relational data modelling for mapping the database to the real world. The relational data model works well with commercial applications but not library-type applications, for example, relational data modelling doesn't allow you to have a repeatable field. Actually, MINISIS already violates this rule. If we make MINISIS a relational database management system, we have to extend the relational data modelling theory. In Version H, we're going to support what we call a nested relational. The system will allow you to have a sub-record within a record. It means that for each sub-fielded field you will consider it as a sub-record within a record. This will also conform with the relation theory in that they may even be physically stored together in the database. Also, we will extend the system with the notion of array. Array, in this case, will be mapped into the existing features, what we call repeatable fields, so a repeatable field will be treated as an array. Again, this notion also will conform with the relational data modelling. In addition, we will support additional join operators.

The DBMS function will be extended in Version H. One of the extensions will allow the user to specify an unlimited number of fields. With the current system, the database is restricted to 256 fields. Version H will not impose any

restriction on the number of fields or the number of the sub-fielded fields; subfielded fields will be treated as a sub-record within a record. Other extensions in the DBMS will support fixed length fields within a master record. Also, we're not going to put any limit on the size, the field length and the record length. In Version G, all you know is that the record can be as large as 64K bytes, but in Version H, there is not going to be any restriction, the limit will be just the size of secondary storage.

Version H will support additional data types. At the moment, we only support two data types: character type and numeric type. Even in numeric type, we restrict it to internal use, and use packed decimal. In Version H, we're going to support numeric data types such as integers, real numbers. One of the problems with some of the existing relational database is the referential integrity. What that means is that in a relational database environment, you have different databases referencing the same records. When some things are deleted from the system, very often the system doesn't have a way to detect that some record was referenced in another database, so you end up with something which does not get referenced. We're going to introduce a new feature in the Version H which will support the referential integrity. It means that when something is deleted from the system, the system will make sure that everything will be removed from the system, or the user will be warned.

We will support a better view update. At the moment, we only handle certain cases of DS update. Version H will support record versioning and roll-back recovery. On the existing system, when a record is updated the original is lost. When the new record is same size (or smaller), the original version of the record is overwritten. If a record has become longer, Version G writes it to the end of the database and does not keep track of the location of the original record. In Version H users will be able to select an option for logging the original versions of records. If the user wants the system to keep track of all of the versions of records, the system will maintain it for you. Also, this option works with the recovery procedure: you can roll back your record to a previous version of the record.

On the existing system, once in a while you had to perform certain system maintenance on your database, which would be either your data files or your inverted files. One of the extensions on the DBMS is a self-maintained system file. This means that the system file is not required for any maintenance. But there is also a disadvantage with this: the system will have to keep track of all the free space in your database. Whenever you request a space, the system will try to find a space to keep your record. So, if your system is used for a long time, your database will become very fragmented. What that means is that your record may be spread in different places in your database. We will provide something to allow the user to reorganize the database. So, Version H will put all the pieces together and the system will access your database more efficiently.

Recently, I went to a Database conference and it seems that SQL will be a crucial language in this decade. In Version H, we will extend the DBMS system to support an SQL-type system, the system schema language they called DML, or the data manipulation language, which is the language to access the database. Also, we will support additional search techniques, for example, the proximity search which is just an extension of the adjacency search. At the moment, adjacency search, you only can search two which are adjacent to each other. With this extension, the system will allow you to search key words within paragraphs, or within a word distance, or within the same sentence. Since we will support a numeric data type, a numeric search also will be included in Version H.

All computer manufacturers seem to offer a form language in any modern operating system. These systems area used for user dialogue or data entry. This is something which we would like to introduce in the Version H. This depends on the time we have. Initially, Version H will provide an interface to the form system of the host computer. For example, on the HP 3000, you probably can use the V-plus system; on the microcomputer, you may want to use the window software. But ultimately, we want to develop our own form system. As I mentioned, the form system, which just consists of a series of the screen and within a screen you can define various fields, while each field may be mapped into your database, and also, you can use the form to develop a different menu system for user dialogue, too. The

user interface of the current version of MINISIS was developed ten years ago, and at that time, a command mode user dialogue seemed to be sufficient. But some people find that the command mode dialogue is sometimes difficult to use, if they don't know the system well. So, one of the options on the Version H will be to support both the command mode dialogue and menu mode dialogue. A help system will be incorporated into Version H and can be in command or menu mode; we may provide a help system along the line of the HP help system.

I have discussed the difference between the commands and menus, and I will discuss how to run MINISIS in Batch mode. At the moment, most of MINISIS can run either on-line or batch. Normally, batch is created by the end-user, and sometimes users may make mistakes in the batch job. In order to catch syntax errors in a Batch job, the creation of a batch job will be initially through an on-line session; MINISIS will verify all your commands or your requests, and will build up a batch job for you. So, users don't have to set up a job with an editor.

In Version H, we would like to make the system work with a pointer device, something like the mouse, which, instead of typing the word, you may want to move the mouse around your screen, and you click when you [want to] select the option which is displayed on the screen, or may want to use the HP approach, which is using a touch screen. These are our ultimate goals. You may not find these in the first release of Version H. Since Version H will support a field or record with unlimited size, it will be difficult to edit a field or record [which is] very long. The ultimate goal of Version H is to provide users with word processing capability for data entry.

As I mentioned earlier, we will support additional numeric data types, a fast access for numeric data, and additional vertical arithmetic operators. At the moment, we only support four different operators, the summation operator, the averaging operator, [the] maximum and [the] minimum operators. And probably we will extend it with something like a percentage operator, and other operators. We would like to interface MINISIS with other statistical packages and graphic systems. The result of computations can be shown in a graph, or can be analyzed by a statistical package.

As you know, MINISIS has a very flexible print language which, at the moment, is working in the line-mode format. Some people find it a little bit difficult to use, because there are so many options in the print language, and people have a hard time figuring out what should be selected when they create a print format. In Version H, we will support the creation/editing of a print format in either command mode or menu mode using a Report Writer. The report writer supports the print language with the text processing capability which allows users to format data either in italics, in bold characters, or underlined. users will not be required to include escape sequence in data in order to print data in different fonts. We would like to interface the report writer with a graphics package. So you can include graphs in your report. It will be integrated with other MINISIS sub-systems; users will run the report writer as a separate step or will activate the report writer via other sub-systems.

In the current version of MINISIS, Version G, we introduced the concept of a Data Dictionary. We use the Data Dictionary to maintain system information. However, not all system information is maintained in it because the current structure of MINISIS doesn't support all of the things we wanted. In Version H, we will see an enhanced version of the Data Dictionary, which will operate in command mode and menu mode. It means that even for defining a database, you can work in the command mode. The Data Dictionary will accept an SQL-style DML, and will support dynamic joins in DS. In Version G, when users access a PS database they have to define the access path to each component. But with the support of dynamic join, users don't have to define a fixed access path; the path can be changed, depending on your applications requirement. So, similarly, the SQL-DML will allow you to specify the access path according to your needs. Version H will continue to provide hooks interfacing with other DBMS systems. The Data Dictionary will tie the MINISIS databases and applications together so users will be able to document their applications using the Data Dictionary. In Version G, users maintain data definitions in the Data Dictionary, but data definitions are not tied to applications. For example, it doesn't tell the system what files are used for different applications, and what files have been created for particular applications. All these things will be tied together by the

Data Dictionary in Version H. Version H will also support the idea of the central Data Dictionary or local Data Dictionary. In Version G, all the database definitions are account based. However, some people have databases which are shared among other users within the same computer system. In order to make databases available to all users, users have to copy data definitions of global databases into individual Data Dictionaries. It means that there's duplication on data definitions. Version H will support the central Data Dictionary which allow users to define system-wide database definitions. As well, Version H will support the local Data Dictionary which is used to support databases in the local environment.

Version H will support the notion of virtual domain. Virtual domain can be treated as a computed domain. It means that the domain does not actually exist, it is derived from one or more other fields. For example, you can make a field, called C, that is resulted from A plus B, or A times B. Then, at the time you access C, the system will automatically compute the field value for you. A composite domain is a virtual domain and is derived from the concatenation of the fields in the same record.

People still find there is a lot of work housekeeping on the existing system, because things are not tied tightly together. In Version H, a feature for managing resources will be implemented. System resources and options will be registered in the system configuration file. Options, such as the capability of the I/0 the definition of the user exit, are recorded in the configuration file. Version H will be loading and unloading exits, so it will have a knowledge of what is available for the application. In Version G system parameters are maintained in different files, for example, you may find them in the message file, the error file, and the syntax file. Version H will consolidate this information into the system configuration file.

Users will be able to define the system capabilities in Version H. For example, if you don't want the SDI feature, you can remove the SDI function. The Resource Management System is used to maintain the system files, for example, message file, help file, form file, and syntax file, and is used to report the resource usage.

Version H will provide users with the database access statistics, usage of functions and QUERY statistics. Although MINISIS databases and system files are self-maintained, users should condense their databases and system files periodically in order to improve the system performance. When MINISIS files are created retention date can be specified to these files. If the retention date is expired then the system will remove these files automatically.

Version H will continue to support all the existing features, for example, the alternate character processing, the user-defined data structure and the MARC interface. At the moment, MARC is a layer of software which sits outside of the MINISIS core system; in Version H, the processing of the MARC will become a part of the MINISIS system, so users will be able to store MARC records in the form of MINISIS.

Users will run their applications in an integrated environment in Version H. As I mentioned to you, you will find fewer processors in Version H because all the existing MINISIS processors will be combined into one processor. In the past, people have had problems linking processors together to solve their problems. In Version H, the system will provide an integrated processor. The users will be able to run QUERY, INDEX, and PRINT in a single step rather than separate steps as in Version G. It will increase the efficiency of the overall system because processors are not executed separately and no redundant work is needed. For example, a subfile, created by one step is no longer required. In an integrated environment, data can be passed between processes via an internal pipeline, not a subfile.

One of the major enhancements of Version H, is an Applications Development Toolkit. This development system provides users with an interface to the Forms system and SQL. Applications will be compiled in pseudo code and are transferable between MINISIS systems (an application which is developed on the HP 3000 will be run on the micro version of MINISIS.) Version H should be functionally compatible with the ISIS family of software; users can exchange

data with the ISIS family of software and will find similar functions across the ISIS family.

Now, about the programming environment in Version H, as you know, the system will be written in C language. HP does not offer the C compiler to the users of HP 3000, however, there are two software vendors who offer the C language compiler for the HP 3000. After considering the stability and popularity of the C compiler in general, we selected the Corporate Computer System C compiler (CCSC) as the development tool for Version H. We have also acquired the Microsoft C compiler for our PC. Initially, the software development will be carried out on both HP and PC. As you know, every manufacturer has extensions in C and we will try to discipline ourselves to use a subset of the C language, which is a common subset implemented in most of the compilers. We are thinking of the ANSI standard of the C language. The Future Systems Group will use object-oriented programming techniques to develop Version H. Object-oriented programming encapsulates the data structure and its access methods into a package. As far as developers are concerned, they access a data structure via a defined method and they don't need to know what's in the package.

The system hierarchy of Version H is divided into layers. Although the system will be developed in the C language, Version H will not be 100 percent portable. In Version H we will have a layer called Machine-Dependent Routines which is contains the hardware specific routines. Based on our past experience, the code in this layer is 5 to 10 percent of the total system. Another layer of the system is the System Procedures which is equivalent to what we have now in the SL library. Procedures such as the database management system, the user dialogue routines, will be found in this layer. There is a new layer to be found in Version H called Application Functions. Finally, we have a layer called System Processor which I will define later. Each layer of this code will be written in C. Version H will provide a generalized processor which will be written in ADL, Applications Development Language. The Applications Development Tool will provide users with the capability of developing their own applications. Alternately, if they don't want to use the ADL, they may develop programs in a 3G language, for example, COBOL, PASCAL, or C language. There will be for exits in Version H in order to customize the users application. An exit can be written either in the C language, ADL, or other high-level 3G languages. Now, the System Processor consists of the System Dictionary Processor, the Resource Manager, the compiler, and the interpreter. The ADL compiler translates an application into a pseudo-code. The pseudo-code is executed by an interpreter.

Since time is running short, I'll try to highlight some of the Application Development Tool. Basically it's a language that has everything built into it (for example, I/O statements, call statements, etc.). ADL will be compiled into pseudo-code which will be executed by an interpreter. An application consist of procedures which can be found in an application or the Procedure Library. The concept of Procedure Library is similar to the SL Library of the HP 3000. As I mentioned earlier, all the existing MINISIS processors will be in an integrated environment in modules which will be the system functions. For people who have special requirements on their applications they can always develop an application using ADL. Since most of the generalized processing is already implemented in system functions the application developer will concentrate on the user dialogue rather than the processing. An application reads the input from the user and activates the appropriate system functions to carry out the requirements. As Terry mentioned, IDRC will probably provide some turnkey systems, such as the Integrated Library System.

Now, I come to the last part of my presentation which is about the migration problem. Since the data file or the internal format will be changed, we will provide a conversion program which will convert all the existing file format into the new format.

The KSAM databases will no longer be used in Version H and these will be converted to a master format. As I mentioned before, the master format will support the fixed length field. users can continue to use the KSAM file concept in Version H. As for the Thesaurus, the KSAM file structure will be changed and will have to be reloaded in Version H. Some of the system files, like the Terminal Handler file, will be converted and saved in the system

configuration file. If exits are developed using high-level interface they can be used in Version H. However exits that are developed in lower-level exits, MINISIS will no longer be supported. If exits are of general interest then they will be incorporated into the core system in the future. If people decide to rewrite an exit, they can write in either the C language or ADL.

An Application program which calls High Level Intrinsics, will continue to operate under Version H. If a program access the DB Minus area directly it will not be supported in Version H because this area is a hidden area of the data stack. We don't want to have a program tied to this particular architecture. Those programs which access some system structures (for example, control record) have to be modified in order to work properly with the system in Version H. Version H will provide similar information through a procedure call.

As far as the Data Dictionary, the structure of the Data Dictionary will be changed but there's no conversion on the content itself. The Object Data Definition will have to be recompiled because there will be a new option added to the data definition. Print Format files will be converted and saved in the Data Dictionary as a part of the database definition. No change is required for Batch jobs; instead of having the user change the jobs, we will provide a set of interpreter programs with the equivalents of the Version G processors. These interpreter programs will interpret all the application commands and will execute them under Version H. I conclude my presentation. Do you have any general questions? Specific questions maybe defer until Friday when we have a Version H round table discussion.

(A. Kuperus): Jan Kuperus from RAET in Holland. My question is simple, the answer is somewhat longer I fear. Could you give us an idea of which parts of the system you outlined will be available by the end of 1990?

The ADL will be made available to the user at that time, and as far as the Data Management System, the only thing we will extend will be the unlimited number of fields, the field length, and record length. Maybe the SQL interface will come later, and basically the SQL interface is just a combination of some of the existing modules. For the form system, we will not create our own form system initially. We will probably make use of some of the existing form systems. Report Writer will also be basically what we have now. For the first release you will not see any interface to the graphic package or any word-processing capability. But we hope to put it into the system later. As far as Data Dictionary, this will be supported the way we specified in the report. Resource Management will be part of the system and will be available in Version H. I guess that's about it, I hope this answers your question.

(Other Speaker): Concerning the portability point, what are the Version you think that you'll begin will and did you decide about what kind of computer?

Okay, as I said earlier, we will develop the system on the HP 3000 system, also some of the codes will be developed using the Microsoft C Compiler on the PC, so there's no promise we're going to have a PC version, but by that time, probably we will have something written for the PC version. Our primary objective of the system is to develop a version for the HP 3000 computer by the end of 1990, and maybe the micro-computers with large configuration. We are thinking of the PC with 1MB memory with the equivalent of AT.

(I.Salem): I am Ibrahim Salem. Have you taken consideration of taking some of the new technology by using like, text-scanner, bar coder, also voice, in the new technology coming into the systems now? Also, a second question is also the possibility of exchanging information with other organizations who have MARC format or other format. Thank-you.

Definitely. There's a hope in this system that allows the system to accept this data but initially we're not going to see actual interface to those, the text-scanner or the sound capture device. I think this is because there's no centralization in those areas. More or less, if you're going to do that you would tie it to a particular hardware or software environment. That's why, initially, we're not going to look into this and we have to come up with a solution which is to

solve this problem. As far as for the change data with other systems; the ISOCONV basically will be extended and some of the ISO-exits which are written by the user will be part of the core system and you will be able to manipulate the MARC record more easily. Besides, the data structure of the system will be extended, so you don't have the restrictions of subfields, or subfields not repeated, because you will find all those characteristics under the Version H.

SCHEDULE OF EVENTS

Monday, September 12	
First Session	Registration
	Address by Ivan Head
	Address by Martha Stone
	Address by Terry Gavin
	Outreach Activities
Second Session	How MINISIS is used at USAID
Tuesday, September 13	
First Session	Arabic Character Set
	Communications Software Packages
	Version G English Demonstration
Second Session	Related Products
	Demonstration of Multi Lingual Integrated Library System
	Version G French Demonstration
Third Session	PROMIS Demonstration
	Session for MINISIS Trainers
	Management of Large Databases
Fourth Session	Thesaurus Applications
	Demonstration of a Menu-Driven Legal and Legislative Application

Fifth Session	Online Communications with CSG
	Demonstration of the IMF Circulation System
	Version G English Demonstration
Sixth Session	Integrated Library System
	PROMIS Demonstration
	Demonstration of Records Management
	CCA's Use of MINISIS

Wednesday, September 14

First Session	Menu Drivers with demonstrations
	Version G English Demonstration
Second Session	UPB
	Version G French Demonstration
	UTFSM
	Distribution of DB's by Means of Commercial DB Host (Demonstration)
	CONACYT
	OAPI
Third Session	Transfer Between Foreign and MINISIS Databases
	Demonstration of the IMF Circulation Module
	Version G Spanish Demonstration

Thursday, September 15

First Session	Use of DCS/ISIS in MINISIS User Group
	Version G English Demonstration
	Bar Code
Second Session	HP Commercial Products Overview
	Version G French Demonstration
	MARC Applications
	NCAER
	AVRDC
Third Session	CMAJ
	SNDT
	Chinese Character Set
	System Management
	Database Perspectives
	Interface Between MINISIS and Trilingual Laser Publishing Package
Fourth Session	PDII
	Circulation, Acquisition, Periodical with a Demonstration of AGRALIN
	Programming Interfaces in C, PASCAL, COBOL
Fifth Session	Legal and Legislative
Sixth Session	Interface between MINISIS and MICRO CDS/ISIS DB's
	MALMARC-MINISIS Interface

MINISIS IN USAID --- TODAY AND IN THE FUTURE

Mr. Ivan Head, Ms. Martha Stone, Mr. Terry Gavin, the rest of the IDRC Staff and fellow Minisis Users. Good afternoon. My name is Lee White. I am with the Center for Development Information and Evaluation (CDIE) of the United States Agency for International Development (USAID). I am delighted to have this opportunity to address the Tenth Annual Minisis Users Group Meeting.

I want to thank IDRC for hosting this year's meeting. This is not to be taken as a simple thank you. Normally, it is more than enough for a Minisis User organization to worry about all of the details and support requirements for hosting an international meeting. Each year, IDRC staff must work countless days and weeks putting together their presentations for new product development, software fixes, and their fallback positions for the infamous, and I am sure on their part, much dreaded Q&A sessions. (Which I might add always seem to be strategically located on the last day of the conference. I've always wondered why?) To expect the same organization to put all of this together into one meeting, plus for the first time expand the Minisis meeting agenda into simultaneous workshop sessions is truly amazing. I hope it works. Knowing IDRC, I know it will.

At the same time, I believe it is very appropriate for IDRC to be hosting this meeting. After ten years of developing and implementing a successful relational database management software package, it is time to assess (1) first, what has been accomplished during the first ten years of Minisis, (2) second, second, describe where we are today, and (3) finally, determine what avenues should be pursued for continued success in the future.

For the U.S Agency for International Development (USAID), as well as many other Minisis Users, the experience over the past seven years has been a successful one.

USAID was first exposed to Minisis in 1980. I recall very clearly to this day the assignment that was given to me by my director, Ms. Lida Allen, that I was to investigate a promising new software package which would solve many of our problems in textual and bibliographic information management. Besides, she said, it is so wonderful to be in Ottawa this time of year. Well, as I got off the plane in Ottawa that early April morning . . . my thoughts of a lovely Spring trip were quickly changed by the cool Ottawa weather. I began to wonder how this trip was going to turn out. However, my concerns were quickly removed upon meeting Terry Gavin and the IDRC staff, who spent numerous hours over several days briefing us on the Minisis software capabilities.

USAID Development Information Program

This trip paved the way for USAID's first long term contract for a Document and Information Handling Facility, established in September, 1981. This information clearinghouse for USAID development information resources uses Minisis as its primary information management tool to support USAID's Development Information Program. The principle program activities supported by Minisis include the following: (1) servicing the Agency's information needs for an "institutional memory" on USAID-sponsored development assistance activities, (2) integrating traditional information clearinghouse operations with USAID's Development Information System databases, (3) supporting a CDIE Research and Reference Services contract to provide USAID and counterpart development staff with information resources needed for development program planning, project design and evaluation and development research activities, (4) integrating bibliographic, project and records management database systems, permitting USAID official project records to be linked and searched jointly with USAID's "institutional memory", (5) providing full document access services to respond to standing-order and on-demand document requests for database citations, (6) serving as a catalyst for transferring

development information to USAID Missions and developing country institutions, and (7) promoting information exchange and access between USAID and other international development organizations, improving donor coordination of development assistance programs.

The Development Information Program also includes a major contract activity which provides economic and social data services to Agency program and agricultural economists for assistance in developing country program strategies, and performing financial, trade, economic and social analysis.

The major objective of the Development Information Program is to promote the utilization and provide development information services and information management tools as a necessary and critical resource input to development assistance programs. CDIE believes that accurate, timely and well-managed development information resources are equally as important to successful development programs as personnel and financial resource inputs.

Minisis Applications in USAID Development Information System

Today, this objective is pursued in part through the use of Minisis. This software program is used to support the acquisitions, technical processing, search and retrieval requirements for the USAID "institutional memory" and "official project records" databases. The "memory" includes descriptive information on USAID development assistance projects, feasibility studies, project design and evaluation reports, technical reports, research studies and Agency publications. The official project record files contain a brief citation record which acts as an index to each project document found in the Agency's official project files. The relational capabilities of Minisis join this complex web of project description, bibliographic, abstract, thesaurus, and related authority files together to form the core component of the Development Information System, or DIS.

Almost every aspect of our clearinghouse facility operation is wholly or partially controlled by Minisis; from document acquisitions, book ordering and serial subscription acquisitions to inventory management and control, from document preparation for microfilming and microfiche header production to computer-output-microfilm and desktop publishing, from cataloging and indexing to on-demand search and retrieval requests, from thesaurus development to thesaurus maintenance and on-line thesaurus-aided retrieval, from fulfilling requests for USAID documents and publications to requester billing and account management, and from management analysis and quality assurance reporting to invoicing and financial management.

USAID Development Information System
Information Resources and Services Growth

Since 1981, the use of Minisis has tripled the USAID "institutional memory" development experience resources which have been processed and are now accessible to USAID and development counterpart professionals through the Development Information System databases. Since 1983, access to official project file records has been improved almost 9-fold to 150,000 project documents. The DIS coverage has been expanded to include an on-line catalog of commercial and development organization publication holdings of the USAID Library in Washington. The number of USAID staff trained on the use of Minisis, and the the computer usage (cpu, log-on time, number of simultaneous sessions, and number of monthly sessions) have all increased dramatically.

An interesting statistic is the number of print sessions and lines of print at our clearinghouse HP 3000/48 computer which have declined while overall computer usage has risen. This can be explained with the acquisition in early 1986 of a large number of personal computers for CDIE's Research and Reference Services contract staff, the primary dial-up, on-line search and retrieval users of the DIS. The availability of microcomputers caused a shift from remote clearinghouse printing services to local, desk-top, microcomputer printing and electronic storage of downloaded DIS system information.

Specialized Development Information System Databases

During the past two years, CDIE has become increasingly involved with projects to create specialized databases within the DIS system. These databases include (1) the women in development database, in which we inventoried and cataloged the USAID Women in Development Office Library collection, (2) the renewable energy database, where we acquired in-depth analytical information on each USAID renewable energy project in the DIS. Both the DIS project database and the MenuDIS interface system were modified to retrieve and browse these lengthy analytical summaries contained in HP editor files once the projects had been identified through a keyword search. (This application would have made good use of the new 64K Minisis record size.), (3) the Special Project on African Agricultural Research, or SPAAR Information System database, in which a group of bilateral and multilateral donors are sharing information concerning on-going and planned research activities in African agricultural development, (4) the development bank catalog database consisting of catalog information for project design and evaluation documents of the Africa, Asia and Inter-American Development Banks held by the USAID Library in Washington, (5) and expansion of the A.I.D. official project files system to include new databases for project records in the USAID Science and Technology Bureau, Contracts Office and Loans Office.

USAID Development Information Network

Another major program initiative launched in the last year has been the creation of a USAID Development Information Network. The purpose of the network is to link 32 USAID Mission libraries and development information centers in developing countries with each other and with USAID information resource centers in Washington: (1) first, to improve the Agency's management of its development information resources through standardized systems and procedures, (2) second, to increase information sharing among network members to expand the utilization of development experience information by USAID Mission staff, (3) third, to eliminate duplication of research, and realize cost savings through access to shared resources, and (4) to improve communications so that experiences in Mission library and information center management could more easily be shared with other network members.

Each network member's library or information center is described in a development information network directory which is updated and distributed by CDIE on a quarterly basis. 25 Mission network sites overseas are now electronically linked via the USAID International Communications System (ICS) to support fast data and information transfer between USAID Missions and between Washington offices and field Missions. CDIE has developed a USAID Development Information Center Manual which provides policy, program and technical guidance to USAID Missions who are establishing or currently operating information centers. We provide Mission information centers with the USAID Development Thesaurus for use in descriptive indexing of development resources which are cataloged in their library collection. CDIE also recently completed a USAID Classification Scheme, based on the general structure of the USAID Thesaurus, for use by Mission libraries as a tool for classifying and organizing development resource holdings for easier library collection browsing and access. CDIE has provided non-automated Mission libraries with its COM indexes of DIS system holdings for local search and retrieval of the USAID institutional memory. Network members are also placed on standing-order distributions for USAID publications and CDIE-generated information products and services.

Finally, CDIE provides installation, training and technical support for network member use of the MicroDIS integrated library management system to automate USAID Mission library catalogs.

MicroDIS

MicroDIS was developed as a simple-to-use, menu-driven, library management system for use by USAID library catalogers and information center directors to catalog and manage their development information resource

collection. The system was specifically designed to provide these functions to a group of library staff who typically had little or no experience in the use of microcomputer equipment and systems, and more specifically in establishing an automated library catalog. The system was also designed to incorporate all of the database management utilities required to maintain data integrity, also through menu selections. In fact, there are very few places in the program in which the use of specific line character commands are required to perform additional program functions (the exceptions being in right truncation searching and acronym expansion to full corporate author names).

The library management program supports acquisitions tracking, cataloging, indexing, search and retrieval, standard bibliographic reports, circulation, reference desk, library management statistics and reporting, and authority file maintenance functions. It is available in three menu interface languages (English, French and Spanish), with accompanying user manual. MicroDIS operates on any IBM PC compatible with a hard disk and DOS 2.1 or higher operating system. Its import/export capability allows bibliographic information to be transferred between MicroDIS installations or between MicroDIS and Minisis installations.

- MicroDIS is now installed in 25 USAID Mission, USAID Office, USAID contractor, PVO (NGO) and U.S. Government sites in 10 countries. An additional 15 MicroDIS installations will be implemented in October with the new release of version 2.2.

Current

USAID Development Information Program

Information Resource Management, Sharing and Exchange Activities

The present CDIE program for information resource management, sharing and exchange activities includes the following activities:

Fulfilling standing-order and on-demand distribution of USAID reports to selected USAID Missions, developing country institutions and development organizations;

Producing and distributing the computer-output-microfilm indexes to DIS databases for non-automated access to USAID reports by USAID staff and development counterparts;

Providing the U.S. Public with direct access to selected portions of the on-line Development Information System through two strategically terminals with 9600 baud modems located in the USAID Library and the State Department building, using the CDIE-developed MenuDIS interface system for novice users;

Redesigning MenuDIS to support on-line document ordering of USAID reports by Agency staff;

Using MicroDIS to catalog USAID library collections, USAID-funded information clearinghouse resources, and USAID classified document collection;

Promoting information sharing among Development Information Network members with the MicroDIS-to-MicroDIS and MicroDIS-to-Minisis system linkages;

Utilizing the USAID International Communications System to download and transfer subsets of the Development Information System, commercial database searches and other development information resources to USAID Mission field offices;

Establishing information exchange programs for donor coordination of development assistance programs through the sharing of publications, statistical, bibliographic and project databases and access to electronic

network systems. USAID currently has programs with IDRC, OECD, and a number of United Nations organizations including the World Bank, IMF, UNICEF, UNFPA, WHO, FAO, UNIDO and UNESCO.

Producing higher quality information dissemination products from Minisis databases to laser-printed publications, including the A.I.D. Research and Development Abstracts, USAID Thesaurus and monthly USAID document acquisitions lists.

Publishing CDIE promotional materials and user manuals with laser printers using Ventura and Aldus Pagemaker software including the USAID Development Information Center Manual, and the MicroDIS Users Manuals.

Future

USAID Development Information Center Program

Information Resource Management, Sharing and Exchange Activities

The future USAID development information program will include the following information management, sharing and exchange activities:

Establishing a Minisis database as a union catalog of USAID Mission Library development resources which will be created from the automated Mission library catalogs constructed from the use of MicroDIS through the Development Information Network and transported through the MicroDIS to Minisis link;

Establishing a Minisis database inventory of USAID videotape resources held by USAID Missions and Offices;

Expanding information exchange programs for donor coordination to other donor organizations using Minisis, such as the Canadian International Development Agency and the Japanese International Cooperation Agency;

Beginning information exchange programs with selected developing country organizations using Minisis;

Establishing regional development education centers in the U.S. for servicing development information needs of U.S. universities and the U.S. public. Initial pilot sites include the Washington, D.C. and Boston, Massachusetts areas;

Upgrading USAID Hewlett Packard 3000/48 computer system and converting remaining 1200 baud dial-up modem lines to 2400 and 9600 baud dial-up facilities;

Establishing the USAID information clearinghouse facility computer as a USAID International Communications System and commercial dial-up node for U.S. and international on-line access to Minisis databases via electronic networking systems;

Developing a prototype USAID CD-ROM optical disk to test and evaluate the effectiveness of this technology for information search, retrieval and dissemination of Development Information System databases, selected full-text Agency publications and statistical data to USAID Development Information Network members, USAID contractors, PVOs (NGOs), and developing country counterpart institutions;

Implementing a research and development program to determine the feasibility of establishing an image processing and text scanning system to replace micrographics processing of USAID source documents with electronic processing and storage technologies;

Implementing full text searching of USAID Minisis and document databases;

Completing a database management software evaluation for supporting USAID bibliographic, textual and document information processing requirements for the new program initiatives cited above through 1995; and

Developing a Wang VS-based Development Information System capable of integrating records management and development information management functions in a multi-user environment, across all organizational units in a USAID Mission, Office or Bureau.

The Future of Minisis in USAID

There are many issues which USAID will be facing during the next five years as it deals with a wide variety of information processing, resource management and technology issues. The trend over the last five years in our Agency has been to place a greater amount of computer processing capability at the finger tips of Agency direct-hire staff in the form of microcomputers, office information systems and minicomputer systems. A large percentage of USAID information is created, managed and stored electronically. Official Agency records, project documents, contractor reports, Agency publications, statistics, and project management information are being processed in electronic form at the local level.

These highly decentralized, local information management systems need to be standardized and integrated, building up from local, unit-level information systems, to Office and Mission systems and finally Bureau-level systems to provide USAID program managers with timely and accurate access to USAID information resources. In USAID this must be done in a Wang VS/OIS/PC environment, which is the current hardware platform of the Agency. It also must take advantage of the investment the Agency has made in their international telecommunications system (ICS) to support two-way electronic transfer of textual, statistical and management information.

USAID over the next five years will continue to utilize its heavy investment in the Hewlett Packard and Minisis database systems to continue its clearinghouse and development information program operations. However, it plans to actively pursue alternative software solutions for the Wang environment and to link its Hewlett Packard system to this new environment to send and receive electronic document, text and project information generated by the new Wang-based systems.

USAID is evaluating software solutions for supporting these information management needs to propose a standard Agency software package which would be used on the Agency's Wang systems. Interim solutions to this problem include wider use of single-user systems including the USAID MicroDIS package, the UNESCO Micro CDS/ISIS package, SCIMATE and DBASE III software. Longer-term solutions being evaluated now include alternative text processing packages such as BASIS, running in a WANG VS environment.

Today, USAID cannot factor Minisis into this equation as a viable option until some basic questions are answered. When will Minisis be an alternative for other manufacturer's computers? Which alternative computer systems will be chosen for implementing other versions of Minisis? Who will do this conversion and maintenance and at what cost? Answers to these questions will help USAID and other Minisis users plan their future information management programs.

Other long term requirements which USAID desires in Minisis include support for optical disk systems, non-traditional data structures including document image, graphics, video and sound, improved full-text

processing support (this morning's session concerning version G improvements in this area have been noted), and easy to use front-end menus that make Minisis functions such as report generation a much easier task than it is today.

Shorter term requirements include other common conversion routines for import/export to popular commercial software packages such as Lotus 1-2-3 for spreadsheet data, and DBASE III for database information, and Minisis support for desktop publishing.

USAID believes that Minisis today still has some unique capabilities not offered by any other relational database package. However, the gap by commercial software vendors is quickly being closed. Some commercial products perform selected text management functions far more efficiently than Minisis.

Many organizations, such as USAID, must interface and provide integrated system solutions that run on different types of machines. A portable C version of Minisis, USAID's highest priority requirement in the next version of Minisis, would go a long way toward solving our information system dilemma. To continue the success that Minisis has attained over the past ten years, USAID urges IDRC to move quickly and to keep its Minisis user community well informed on its progress in developing Version H of Minisis.

REFORMATION BILINGUAL DATA (Arabic/Latin) FOR THE TRANSFER BETWEEN ARABIC VERSIONS OF MINISIS Version G and Mini-Micro CDS/ISIS Version 2.0 using ISO 2709

Developped at ALDOC by
JAFFAL JAAFAR & JRAD RADOUANE
last revise: 15/06/1988

This utility was made by ALDOC (Arab League Documentation and Information Center) to transfer bilingual records between MINISIS and Mini-Micro CDS/ISIS. Since ALDOC has arabized both MINISIS and CDS/ISIS, and with the increasing use of those systems, especially in the Arab world, it is becoming increasingly necessary to transfer data between the MINISIS on HP/3000 and Mini-Micro CDS/ISIS on IBM and compatible microcomputers.

As example, the ability to readily exchange data might be useful in a network of institutions that has a central node with MINISIS, serving members that have the microcomputer version of CDS/ISIS. In such a situation, it is conceivable that centers equipped with microcomputers would utilize CDS/ISIS .o collect and maintain their own holdings, and would also like to upload their data to the central node. Similarly, records maintained in the central node might be of interest to some of the other centers, that is why it would be expedient to be able to automatically download such records. The following sections discuss the problems of downloading and uploading of data entails, and a step-by-step way to overcome them.

I- TRANSFERRING DATA FROM MINISIS TO CDS/ISIS

The greatest difficulties will be encountered in transferring data to the microcomputer. The data must be transferred using ISO 2709, since this is the only external input format supported by CDS/ISIS. Special care should be taken on both machines to ensure success. Here are some of the difficulties that have to be overcome:

- The two systems handle subfields differently. MINISIS uses the FIELD TAG to indicate the relationship of subfields to a primary field (eg. A101, A102 and A103 are subfields of A100). CDS/ISIS uses internal character strings to separate and identify the subfields within the primary field (eg. ^a, ^b, and ^c would precede data for the subfields of field 100). Here is an example of how the same data would be maintained in both systems:

  MINISIS: A101: Arab League Documentation Center
  A102: 37, Khereddine Pacha Street, Tunis
  A103: TUNISIA

  CDS/ISIS: 100: ^aArab League Documentation Center^b37, Khereddine Pacha Street, Tunis^cTUNISIA

- CDS/ISIS can only accept unblocked physical records of 80 bytes (with the last physical record in a logical record being shorter, as determined by the data). Hence some record restructuring is required.

- CDS/ISIS adheres strictly to the standard ISO 2709 (of 1973) for field and record delimiters. Therefore CDS/ISIS expects two delimiters at the end of a logical record (a field separator and a record separator). MINISIS only provides one (the record separator).

- MINISIS arabization respects strictly the ASMO 449 (7-bit coded Arabic character set for information interchange), therefore alternative modes are set-up by ESCAPE SEQUENCES. However, CDS/ISIS arabization tries, as far as possible, to comply with ASMO 708 (8-bit code Arabic/Latin character set for information interchange), which uses FLAGS SETTING for alternative modes.

I.1- Defining the Correspondence Definition between MINISIS and CDS/ISIS

It is initially necessary to create a 'Correpondence definition' (CD) in MINISIS, which will be used by ISOCONV to define the mapping of MINISIS field tags to CDS/ISIS field tags. The CD will also determine how subfields are to be handled.

Use the MINISIS DATADICT processor to create the Correspondence Definition. When asked for:

TYPE OF DATA DEFINITION (1=RD/2=PS/3=DS/4=CD) ---> respond with 4

When filling the worksheet for each field of the CD, you should answer the following requests as follow:

ISO TYPE ..... > respond with CDS/ISIS
UNBLOCKED TAPE (Y/N) ..... > respond with Y
LENGTH OF BLOCK-LENGTH FIELD ..... > respond with 0
FUNCTION CODE OF SPECIAL EXIT ..... > respond with 1

When defining a subfielded field, indicate that it is subfielded by specifying the number of subfield identifiers correctly, and by providing the two-character subfield identifiers used by CDS/ISIS. MINISIS field A100, with subfields A101, A102, and A103, will appear in CDS/ISIS as:

SUBFIELD IDENTIFIERS ..... >^A^B^C

There is no requirement to identify the subfields directly.

Important note:
When defining your CD, you should take care that MINISIS has some reserved ISO TAGs as described below:

TAG 001 ..... > reserved for MINISIS ISN
TAG 002-009 ..... > reserved for ISO 2709 record leader

Therefore the user is invited not to include any reserved ISO TAG inside the CD.

I.2- Defining a File Equation

Before running ISOCONV, you must provide a file equation for the file 'ISO' that includes the following parameter:

FILE ISO=<file name>;REC=-80,1,F,ASCII;DEV=DISC

Where: file name: is the name of ISO file

I.3- Running ISOCONV

Now all is set-up for MINISIS to convert the data from its internal format to ISO 2709. In ISOCONV specify the command:

LOAD FROM=<from file>,TO=<to file>,EXIT=<program>

Where: - from file: is the name of the MINISIS database being converted,
- to file :is the name of the CD created in step I.1 above,
- program : is the name of the exit program (CDS'CONV) which converts arabic 7-bit codes (ASMO 449) to arabic 8-bit codes (ASMO 708) and removes all the ESCAPE sequences used by MINISIS for alternative modes.

N.B.: the EXIT program should be used only for bilingual databases (or Arabic databases). It has not to be present within the LOAD command when the transferred database is Latin (eg. does not contain any arabic characters).

I.4- Transferring the ISOCONV output file to the microcomputer

The next step is to transfer the ISOCONV output file, 'ISO', to the microcomputer. Any standard communication package could be used, although ADVANCE LINK (HP product) may prove the easiest choice, since it sends the correct commands to the HP 3000 to effect the file copy. Make sure that the data is transferred in EXTENDED ASCII (or ASCII if latin data only).

I.5- Reformatting of bilingual data on the micro

A special program must be run to reformat bilingual text as required by CDS/ISIS. The program written in PASCAL and called REF-G will do this.

N.B.: - G refers to Version G of MINISIS
- REF-G must be used only if your database contains any arabic characters, this step should be omitted if your database is latin.

I.6- Running ISISXCH

The last step is of course to load the data into a defined database in CDS/ISIS. Use the import option, 'I', on the ISISXCH menu to achieve this.

II- TRANSFERRING DATA FROM CDS/ISIS to MINISIS

Importing data into CDS/ISIS can only be done using the ISO 2709 format. The reverse is not possible with MINISIS, since it can handle data in a variety of formats, using BATCHIN as well as ISOCONV, and since the print formatting facilities of CDS/ISIS are more than adequate to provide the data in a format directly usable by BATCHIN. For completeness, however, the following will describe how to transfer data using ISO 2709.

Most of the comments made in the previous section about the problems to be overcome when transferring data from MINISIS to CDS/ISIS are applicable in reverse order. Here are the difficulties to be watch for if the

operation is to be attempted int he other direction, using ISO 2709:

- Subfields must be handled as described before, since the internal handling of subfields is different in the two systems.

- Care must be taken in specifying block lengths on input and output when transferring data between the two computers to avoid having extra control characters inserted in the data.

II-1- Running ISISXCH

The first step is to export the data from the CDS/ISIS database into ISO 2709 format. Use for this the export option, 'E', on the ISISXCH menu. For the most part, all options in the export menu default correctly, including the field and record separators (ISOCONV does not care what separators are used).

II.2- Reformatting bilingual data on the micro

The same program REF-G should be used here to reformat bilingual data if any. The user chooses if arabic terms only or latin terms only should be reversed, this depends upon the transferred database if mostly arabic or mostly latin.

N.B.: - G refers to Version G of MINISIS
- REF-G must be used only if your database contains any arabic characters, this step should be omitted if your database is latin.
- for more details of using REF-G, see paragraph III below.

II.3- transferring the CDS/ISIS reformatted file to the HP 3000

In this step, you should transfer the reformatted filed, 'ISO.MST', to the HP 3000. Any standard communication package could be used, although ADVANCE LINK may prove to be the easiest choice, since it sends the correct commands to the HP 3000 to effect the file copy. Make sure that the following parameters are specified:

data is transferred in : EXTENDED ASCII
output blocksize is : 80

II.4- Defining the Correspondence Definition Between CDS/ISIS and MINISIS

The Correspondence Definition (CD) is required in MINISIS, which will be used by ISOCONV to define the mapping of CDS/ISIS field tags to MINISIS field tags - refer to the information in section I.1 above for details on how this is done.

II.5- Defining a File Equation

Before running ISOCONV, you must provide a file equation for the file 'ISO' that includes the following parameter:

FILE ISO=<file name>;REC=„V,ASCII;DEV=DISC

Where: file name: is the name of ISO file

II.6- Running ISOCONV

Now all is ready for MINISIS to import the data into its internal format. from ISO 2709. In ISOCONV specify the command:

DUMP FROM=<from file>,TO=<to file>,EXIT=<program>

Where: - from file : is the name of the CD created above,
- to file : is the name of the MINISIS database that is to receive the data,
- program: is the name of exit program (MIN'CONV) which converts arabic 8-bit codes (ASMO 708) to arabic 7-bit codes (ASMO 449) and inserts all the ESCAPE sequences used by MINISIS for alternative modes.

N.B.: the EXIT program should be used only for bilingual databases (or Arabic databases). It has not to be present within the DUMP command when the transferred database is Latin (eg. does not contain any arabic characters).

III. DESCRIPTION OF REF-G

III.1- Introduction

REF-G is written in PASCAL language and designed to work on IBM and compatible Micro-computers which contain an Enhanced Graphics Adapter (EGA), it runs under MS-DOS Version 3.xx operating system combined to the National Language Supplement (NLS) software.

REF-G and its related conversion tables (REFCONV1.TAB and REFCONV2.TAB) are distributed by ALDOC free of charge, especially for users who have both MINISIS and Mini-Micro CDS/ISIS systems.

III.2- How to call and run REF-G

You can call and run REF-G on a floppy disc or a hard disc, however, we advise users to copy REF-G and its related files to the same sub-directory on the micro-computer's hard disc which contains CDS/ISIS programs and batch-files.

To call and run REF-G, you have only to go to the sub-directory mentioned above, and type:
> REF-G

III.3- Description of REF-G options

After calling REF-G, it responds like this:

At this step, you should choose an option:

1: if you are downloading data from MINISIS to CDS/ISIS
2: if you are uploading data from CDS/ISIS to MINISIS

```
REFORMATING BILINGUAL DATA (Arabic/Latin) FOR THE TRANSFER BETWEEN
MINISIS Version G & Mini-Micro CDS/ISIS Version 2.0
using ISO 2709

Developed at ALDOC [redacted]
last revise: 15/06/1988

ENTER:  (1) to reformat transferred file from MINISIS to CDS/ISIS
        (2) to reformat transferred file from CDS/ISIS to MINISIS
        (3) to EXIT");

Option selected: -
```

After this choice, additional options are shown:
if you have chosen option 1 above, you will see:

```
Name of input file   (Exported from CDS/ISIS by ISISXCH):

Name of output file  (To import to CDS/ISIS by ISISXCH) :
```

if you have choosen option 2 above, you will see:

```
Name of input file (Exported from CDS/ISIS by ISISXCH) :

Name of output file (To import to MINISIS by ISOCONV) :
```

Note that REF-G will verify every file name you entered, and will give you an error message if the mentionned file does not exist in the default sub-directory (where you are running REF-G).

Now you reach the step of terms reformatting, this is shown as:

```
ENTER: (1) to reverse Arabic terms (only for LATIN DATABASE)
       (2) to reverse Latin terms (only for ARABIC DATABASE)

            Option selected: -
```

Reversing will happen for only arabic terms or latin terms in a given database (and not for both terms), this because the storage of bilingual texts differs from CDS/ISIS to MINISIS strategy, thus CDS/ISIS store bilingual text

as shown on the screen, especially those texts edited in the complementary mode (or secondary mode), this method is called LIFO (Last In, First Out). However, MINISIS applied a better standard method in storing bilingual texts, which is called FIFO (First In, First Out).

Enter 1 if your database is latin, this means that database name in CDS/ISIS system is written in latin characters and it is used in primary latin mode of the screen.

Enter 2 if your database is arabic, this means that database name in CDS/ISIS system is written in arabic characters and it is used in primary arabic mode of the screen.

To finish with REF-G options, you should advise REF-G if you want to convert sub-fields identifiers from arabic to latin or vice-versa. This problem occurs because MINISIS does not understand arabic sub-field identifiers of CDS/ISIS. Two conversion tables are given with REF-G to help the program to convert identifiers in a standard way in both directions (from CDS/ISIS to MINISIS and vice-versa).

COMMUNICATIONS ASPECTS OF THE DISTRIBUTION OF THE INTERNATIONAL REGISTER OF POTENTIALLY TOXIC CHEMICALS BY MEANS OF A COMMERCIAL DATABASE HOST.

Ruta Whittaker

1. What is IRPTC?

In 1974, the United Nations Environment Programme (UNEP) decided to establish both a chemical register and a global network for the exchange of the information the register would contain.

The objectives of the International Register of Potentially Toxic Chemicals (IRPTC) are as follows:

1. To make data on chemicals readily available to those who need it.
2. To locatae and draw attention to the major gaps in the available information and encourage research to fill those gaps.
3. To identify the potential hazards of using chemicals and make people aware of them.
4. To assemble information on existing policies for control and regulation of hazardous chemicals at national, regional and global levels.

Since 1976, the central unit of IRPTC, located in Geneva, Switzerland, has been collecting, storing and disseminating data on chemicals and operating a global network for information exchange.

Network partners located outside the central unit consist of approximately one hundred and seven National Correspondents appointed by governments, national and international institutions, industries and external contractors.

IRPTC collects two broad types of information: information on the toxicity of chemicals and their behaviour in the environment and information on chemical regulation.

Until recently, this information was only available electronically in Geneva, on an IBM 370 mainframe, using ADABAS as a database management system. Requests for information contained in the IRPTC files were solely answered by the central unit in Geneva, using programming procedures written in Natural language. The information was then forwarded to the appropriate National Correspondent. Needless to say, this was not the most efficient method for the transmission of data.

Since 1984, the Department of National Health and Welfare, has been converting IRPTC files to a MINISIS/HP3000 system. This configuration was chosen because of the relative simplicity of the query processor, ability to handle word searching and cost. As of December, 1987 all thirty seven IRPTC files have been converted. Additionally, all files have also been prefaced by user friendly menus, based on the International Labour Organization's menus, to facilitate searches for infrequent users. This enabled the Department to provide a more efficient query-response service within Canada. It also gave on-line access by Departmental staff to the IRPTC database.

Limited on-line access to the Canadian IRPTC databases was also given to several provincial governments who had participated in joint projects. Because of requests for direct access by other potential users, a decision was made in 1986, to distribute the system by means of a database host. In order to accomplish this, a dedicated computer (HP 3000 Micro XE) was acquired in conjunction with the necessary communications interfaces.

The database host chosen for this project is Telecom Canada, an organization composed of ten of Canada's telephone companies. iNet 2000 will provide the distribution gateway to Canadian users. In principle, access will also be available through U.S. networks such as Tymnet and Telenet, although this project is aimed primarily towards Canadian users.

2. COMMUNICATIONS ASPECTS OF THE DATABASE DISTRIBUTION

In order to provide an interface between the Hewlett-Packard Micro 3000/XE and the Telecom Canada iNet 2000 network, it was necessary to ascertain the communications hardware requirements.

Several requirements were identified:

1. It was essential to have X.25 capability for the packet switching network interface.
2. A large enough simultaneous port capability to allow for eight concurrent external sessions.
3. The software was to be sufficiently versatile to store several established communications parameters, while allowing daily operational changes to be made easily.

After reviewing a representative sample of communications hardware, the Gandalf XMUX/2000 was chosen.

Some of the characteristics of the equipment are:

1. X.25 capability.
2. Eight simultaneous ports, with board add-on expansion to sixteen ports.
3. Menu driven configuration enabling port profile setting.

This equipment has now been in full operation for the last three months, and while the initial installation was not without difficulties, the system is now fully functional. The encountered difficulties were mainly in the area of data flow, and matching the communicaitons parameters inherent to the Hewlett-Packard equipment to the required characteristics for DATAPAC transmissions and reception.

DATAPAC is the Canadian packet switching network. It can be accessed in seventy-five countries around the world, through various national communications protocols. Thus, the IRPTC/Health and Welfare databases can be accessed by many organizations worldwide. The only hardware requirements are a modem/personal computer or modem/terminal combination. International access is subject to approval by the International Register of Potentially Toxic Chemicals (IRPTC) programme activity centre.

3. SOURCES, SELECTION, STRUCTURE AND CONTENTS OF IRPTC FILES

As stated earlier, two broad types of information are to be found within IRPTC files: information on the behaviour of chemicals and information on chemical regulation.

Information on chemicals is obtained from national and international institutions, industries, universities, private databanks, libraries, academic institutions, scientific journals and United Nations bodies such as the International Programme on Chemical Safety.

Regulatory information on chemicals is largely contributed by National Correspondents.

Six hundred chemicals have been selected for the environmental and toxicological files, and six thousand for the legal file. These chemicals were mainly selected from national and international priority lists. Criteria used in the selection include such aspects as quantity or production and use, toxicity to humans and ecosystems, persistence in the environment and the rate of accumulation in living organisms.

The main objective for collecting information on these selected chemicals is to permit users to assess the risks and hazards posed by chemical substances to human health and the environment.

Specific criteria have been used for the entry of data in the databases. Generally, IRPTC uses data sources cited in the secondary literature produced by national and international panels of experts. The data are then extracted from the primary literature, with complete indentification of references.

Entered data area available according to attribute categories or data files, selected for their relevance in evaluating the hazards associated with particular chemicals. Each file contains data records, representing complete items of information.

IRPTC FILE STRUCTURE (MINISIS CONFIGURATION)

IDENTIFIERS, PRODUCTION, CONCENTRATIONS, PROCESSES AND WASTE

- Identifiers and Properties
- Production/Trade
- Use
- Loss/Persistence

- Concentrations
- Human Intake
- Analysis
- Waste Management

ENVIRONMENTAL FATE TESTS AND ENVIRONMENTAL FATE AND PATHWAYS INTO THE ENVIRONMENT

- Biodegradation/Biotransformation
- Photodegradation
- Hydrolysis
- Sorption
- Evaporation
- Oxidation
- Model Ecosystem Studies
- Environmental Fate and Pathways into the Environment

CHEMOBIOKINETICS AND EFFECTS ON ORGANISMS IN THE ENVIRONMENT

- Absorption
- Distribution
- Bioconcentration Factor
- Metabolism
- Aquatic Toxicity
- Terrestrial Toxicity

MAMMALIAN TOXICITY

SPECIAL TOXICITY STUDIES

- Biochemical Interactions
- Carcinogenicity
- Mutagenicity
- Neurotoxicity
- Behaviour
- Sensitization
- Interacting Agents
- Primary Interactions
- Immunotoxicity
- Reproduction
- Teratogenicity

RECOMMENDATIONS/LEGAL MECHANISMS

3. CONTENTS OF IRPTC DATABASES

(i) LEGAL DATABASE

The Legal Database, one of the largest files on the IRPTC on-line system, deals with regulatory information from approximately twenty countries and six international organizations. Canadian regulatory data is

presently being added, and should become available within three months.

The IRPTC legal database contains information on regulatory mechanisms related to chemical substance control in media such as air, water, drinking water, wastes, soil, sediments, animal and plant tissues, food and beverages, drugs, consumer goods and agriculture.

The whole text of the legislation does not appear in the database; rather, a summary of the legislation is to be found as well as an indication of the reference from which the information was extracted. All references are given a unique six-letter code or CODEN. These CODENS are obtained fromt he Chemical Abstracts Service, and are available both on-line and in microfiche format.

The chemical Pentachlorophenol illustrates the search possibilities of this database. The search fields are the following:

Chemical name
Common name
RTECS number (Registry of Toxic Effects of Chemical Substances)
CAS number (Chemical Abstracts Services)
Area
Type of Legal Mechanism
Subject of Mechanism
Specification
Description

Combining the chemical name and the subject descriptors (=drink) the result listed below is obtained. It describes the World Health Organization's drinking water guidelines for Pentachlorophenol.

SYN: PENTACHLOROPHENOL
RTECS NUMBER: SM6300000
CAS NUMBER: 87-86-5

RECOMMENDATIONS/LEGAL MECHANISMS

AREA	TYPE	SUBJECT	SPECIFIC-DESC	LEVELS	REMARKS
WHO	REC	AQ	DRINK GL	10 UG.L	

VOLUME	PART	PAGE	YEAR	EVAL	REFERENCE
	SECONDARY:				
	PRIMARY:			WHODW*	17 1983
					ENTRY DATE: MCH 1983

(ii) MAMMALIAN AND SPECIAL TOXICITY STUDIES DATABASES

Acute, subchronic and chronic toxicity study results in mammals are to be found in the Mammalian Toxicity database. Particular effects such as mutagenicity, carcinogencicity, teratongenicity are described in the Special Toxicity database. In addition to the chemical identifier search fields such as chemical substance name, RTECS and CAS numbers other parameters such as type of study, type of organism, route of exposure, specification of organism by its strain/species/system and geographic area can be also used.

The next example illustrates one record dealing with Pentachlorophenol in the Carcinogenicity database.

RTECNO: SM6300000 SUBSTANCE: PENTACHLOROPHENOL
CAS NUMBER: 87-86-5

TEST DESCRIPTION TEST CONDITIONS

ORGANISM: STUDY TYPE: GEOG.AREA:
LIFESTAGE AGE: PURITY:
FUNCTIONAL APPRAISAL: EXPERIMENTAL DATA: PENTACHLOROPHENOL WAS TESTED IN ONE EXPERIMENT IN TWO STRAINS OF MICE AND IN ONE EXPERIMENT IN RATS BY ORAL ADMINISTRATION AT DOSE LEVELS SUFFICIENTLY HIGH TO CAUSE MILD TOXICITY: NO CARCINOGENIC EFFECT WAS SEEN IN EITHER SPECIES. PENTACHLOROPHENOL WAS ALSO TESTED IN ONE EXPERIMENT IN MICE AND OF TWO STRAINS BY SUBCUTANEOUS INJECTION OF SINGLE DOSES: IT PRODUCED HEPATOMAS IN MALES OF ONE STRAIN. PENTACHLOROPHENOL DID NOT INDUCE SEX-LINKED RECESSIVE LETHALS IN DROSPHILA MELANOGASTER. HUMAN DATA: NO CASE REPORTS OR EPIDEMIOLOGICAL STUDIES WERE AVAILABLE TO THE WORKING GROUP. THE EXTENSIVE PRODUCTION OF PENTACHLOROPHENOL AND ITS USE FOR WOOD PRESEVATION AND TO A LESSER EXTENT IN HOMES AND GARDENS, TOGETHER WITH THE PERSISITENT NATURE OF THE COMPOUND, INDICATE THAT WIDESPREAD HUMAN EXPOSURE OCCURS. THIS IS CONFIRMED BY MANY REPORTS OF ITS PRESENCE IN BODY FLUIDS, BOTH IN THE GENERAL POPULATION AND EXPOSED WORKERS. SEVERAL EPIDSODES OF OCCUPATIONAL INTOXICATION HAVE BEEN REPORTED.
EVALUATION: THE AVAILABLE DATA DO NOT PERMIT AN EVALUATION OF THE CARCINOGENICITY OF PENTACHLOROPHENOL TO BE MADE

VEHICLE SOLVENT:
TEST SUBST/PARTICLE SIZE:

EVALUATED	REFERENCE	VOLUME	PART-PAGE	YEAR
8				
PRIMARY:				
SECONDARY:	IARMB8	20	317	1979
PRIM. AUTHOR:				
SECND. AUTHOR				

(iii) ENVIRONMENTAL FATE DATABASES

The environmental hazard of specific substance is a funtion of its persistance and concentration.

The Environmental Fate databases contain substance transport estimates between environmental compartments such as transport in air, water-air exchange and troposphere-stratosphere exchange. In addition to chemical identity parameters and reference fields, specific fields such as species-strain system, organism, study, test-substance, pathway and medium are also present.

The following example has been taken from the Photodegradation database:

RTECS-NO: SM6300000 SUBSTANCE: PENTACHLOROPHENOL
CAS NUMBER: 87-86-5

----------TEST DESCRIPTION----------TEST CONDITION----------

APPLIED AMOUNT:
GEOGRAPHIC AREA:
MEDIUM: AQ
PURITY GRADE:
CONDITIONS:

LOW	HI	UNIT TYPE
3.3	7.3	

TEST SUBSTANCE PART.SIZE
TEST CONDITION METHOD: UV LIGHT, SUNLIGHT
UNPUB-EVAL--------REF.-VOL----------PART--PAGE--YEAR-----
PRIMARY: JAFCAU 29
AUTHOR:
SECONDARY:
AUTHOR:

----------RESULTS----------

QUANTITY LOW	QUANTITY HI	UNIT		TIME LOW	TIME HI	TIME UNIT	COMMENTS
50	50	%	LOSS	3.5	3.5	H	UV, PH 7.3 TETRACHLOROCATECHOL
50	50	%	LOSS	100	100	H	UV, PH 3.3 TETRACHLORO RESORCINOL
50	50	%	LOSS	48	48	H	SUNLIGHT, PH 7.3 TETRAHYDROQUINONE
100	100	%	LOSS	10	10	D	SUNLIGHT, PH 7.3 CHLORANIL, HYDROQUINONES, 2, 3-DICHLOROMALEIC ACID

4. UNIQUE FEATURE OF IRPTC.

The most salient feature of the Legal database is the international legislative coverage presented by this file. Indeed, information has been gathered from over twenty countries, representing all five continents and six international organizations, conveying concise, timely information on regulations regarding more than six thousand chemicals in media as varied as air, food, soil, water and situations as diverse as occupational, agricultural, industrial and marine. This database contains more than forty thousand records.

The environmental and toxicological files of the IRPTC provide factual, reviewed information on six hundred chemicals. Information is organized in discrete, well defined categories such as teratogenicity, human intake and waste management.

These databases have been designed for both the information specialist and teh occasional scientific user. While the Canadian version of the IRPTC database system uses the MINISIS query processor as its interrogation system, a very easy to use menu driven structure has been integrated into all the databases to permit searching by the occasional user without having to resort to voluminous manuals.

Access wil be available through Telecom Canada. It is expected that user accreditation will occur within forty eight hours. U.S. users will be able to communicate with the system by means of existing networks (Tymnet, Telenet).

5. CONCLUSION.

An easily accessible, simple to use legislative, environmental, toxicological and waste management database system has been developed by the United Nations Environment Programme and is presently distributed by the Department of National Health and Welfare.

The Multilingual Biblioservice
At the National Library of Canada

The origins of the Multilingual Biblioservice of the Nation Library of Canada can be traced to the Canadian library community's endeavour to improve library services to ethno-cultural groups, culminating in a resolution drafted by the CLA Annual Conference in 1970. Because individual libraries were not equipped to cope adequately with the complex task of acquiring and processing library materials in various foreign languages, the resolution called for the formation of a committee to investigate the problem. The committee, under the chairmanship of Leonard Wertheimer, then head of the Metro Toronto Languages Centre, suggested a centralized multilingual collection. Three years later the Multilingual Biblioservice (MBS) was established as a division of the National Library within the framework of the federal government's multicultural programme.

The idea of a central foreign-language library supplying books to all public libraries on a rotating loan basis was, at the time, a most progressive and innovative concept. Today many countries accept this method as the most effective way to serve ethnic groups, which change constantly in size and distribution. But Canada was probably the first country to establish a comprehensive government-sponsored service.

The Multilingual Biblioservice currently operates as a self-contained division of the Public Services Branch of the National Library of Canada. Its mandate is to provide books in the non-official languages spoken in Canada, i.e., in languages other than English and French, with the exception of native tongues. Various surveys done by Provincial Library Services have shown that collections in at least 70 languages are needed to ensure service to about 98% of the target population.

The Collection. For the most part MBS selects non-scholarly material, intended for leisure reading. Collections consist of 60% contemporary fiction, 20% children's books and 20% subject-oriented works (biographies, books on folklore, travel, child-care, etc.) Classics of general interest and still in popular demand area also selected for the collections. Original works are preferred over translations since the collection is intended to allow readers access to the native literature of the language group. Material publish in Canada is purchased when available. For older and visually impaired patrons, MBS has books in large print, which it not only circulates in its usual fashion but also deposits at the National Library for interlibrary loan. More recently, MBS has started a collection of talking books on cassette in all languages where these are commercially available.

MBS started with collections in the eight languages most in demand. New languages were subsequently added according to the requests submitted by libraries across the country. At present MBS handles collections in 28 languages: Arabic, Chinese, Czech, Dutch, Estonian, Finnish, Gaelic, German, Greek, Hindi, Hungarian, Icelandic, Italian, Japanese, Lithuanian, Maltese, Norwegian, Polish, Portuguese, Punjabi, Russian, Slovak, Spanish, Swedish, Ukrainian, Urdu, Vietnamese, and Welsh. Language specialists, who work on contract, assist in the selection of material, the preparation of descriptive cataloguing and annotations, and the choosing of books for distribution.

Selection. Books are selected for MBS from review and trade journal, from publishers' catalogues, directly off the shelf in bookstores, and from approval orders sent by dealers. The approval method has proved to be the most effective when dealing with countries with a well-developed book trade. Under this system, a knowledgeable bookdealer chooses books according to the detailed MBS Collections Policy and Guidelines and send them to MBS. MBS then selects from among these books and returns the unwanted volumes to the dealer. This method ensures that newly-publish books are immediately available to MBS.

Acquisitions. Books are acquired both from Canadian dealers specializing in foreign-book imports and from dealers in the country of origin. Individual orders are placed for some items, but most books are acquired on approval, which is the most cost-effective method. It should also be noted that many gift volumes are received from embassies, organizations and private individuals. MBS also selects books from the material received by the Canadian Book Exchange Centre.

Cataloguing and Material Processing. Books are catalogued in the vernacular. For descriptive cataloguing, MBS uses the Anglo-American Cataloguing Rules, second edition (AACR2), slightly modified to correspond to specific requirements. Cataloguing is kept as simple as possible for two reasons: to permit speedy processing and to make the rules acceptable to libraries of all types and sizes. Classification is also simplified. In keeping with the common classification practice in public libraries, MBS uses the 19th edition of the Dewey Decimal Classification for its subject-oriented material, limiting the numbers to three digits beyond the decimal point. Letter classes instead of Dewey numbers are used for certain categories of books. The main entry is given in the language of publication. In the non-roman languages a romanized form of the author's name and title is given in a note; LC transliteration tables are used for this purpose. The author's name is usually transcribed exactly as it appears on the title page. Description, given in the language of publication, is kept to a minimum. Information on translator, editor, illustrator, edition statement and pagination are given selectively, depending on their importance. Publishers' names in the imprint are often abbreviated. The notes following the descriptive part are restricted only to those which are indispensable.

Subject headings are replaced on MBS catalogue cards by English and French annotations which convey basic information on the content and genre of the book. They serve to assist librarians and the staff of deposit centres in identifying types of books for the purpose of reference and circulation. Children's books are not provided with annotations, and books in the fiction category only bear brief ones.

In order to facilitate the filing of materials in different scripts, the cards are filed by language. The call number consists of several elements: 1. A code for the language of the book comes first, made up of three letters consistent with CAN/MARC coding. 2. Unusual format is indicated by L for Large Print or T for Talking Books. 3. The type of book is shown by a letter in the case of three categories in the collection, i.e., C for children's books, F for novels and short-stories, B for biographies, or by a Dewey classification number for subject-oriented books. 4. Last comes a shelf-ordering code or "Cutter", consisting either of the three first letters of the author or title entry (for languages written in a roman script) or of a control number, assigned in a separate consecutive numbering sequence in each collection category (for each language written in a non-roman script). However, given the enormous number and complexity of the characters in the Chinese language, the filing of the Chinese catalogue cards is based on a stroke count of the first three characters of the title, printed in the upper right corner of the catalogue card.

Once books have been catalogued, they are fitted with an ex-libris and with spine labels indicating the call number. Most books are bound or laminated and reinforced as required.

Reader's Services. Because public libraries in Canada are tax supported and fall under provincial jurisdiction, MBS must work through the mediation of provincial library system rather than dealing directly with individual libraries. Provincial Library Services survey the needs of all ethno-cultural communities in a given province and channel their requests, by language, to the Multilingual Biblioservice. Books are then sent free of charge to the designated provincial depot centres. These centrally located libraries in turn circulate the books through the network of public libraries in their province, according to local needs. Books are sent on a long-tern deposit; when local interest in them has been satisfied, they are return to MBS for recirculation to other depot centres.

Each shipment of books sent by MBS to the centres is accompanied by a book-catalogue listing the books shipped. Publicity materials, such as posters and brochures, are also available in quantity on request.

To keep abreast of developments and trends MBS maintains a small reference collection on Canadian ethno-cultural groups and their activities. It also gathers material about library services to linguistic minorities world-wide. These reference collections are accessible for research and information on the premises of the Multilingual Biblioservice.

Recently MBS has begun a major project which will lead to the automation of all its procedures using MINISIS - a database management system developed in Canada by the International Development Research Centre (IDRC). The chief attraction of MINISIS for MBS is its ability to process a wide variety of accents and special characters, and also non-Roman scripts. Since MINISIS can only be run on Hewlett-Packard computers, MBS has purchased a HP Series 3000-37 mini-computer with Lanpar Vision II terminals and 4 Facit B3150 printers.

The MBS MINISIS database will provide on-line access to information on the acquisition, cataloguing and circulation of every title in the collection. In order to achieve this goal, the retrospective conversion of MBS cataloguing and circulation records was initiated in October 1987.

MINISIS TRAINING COURSE GUIDE

by

JULIUS L. MANALO
Chief, EDP Division
Science & Technology Information Institute
Department of Science & Technology

"MINISIS is a Data Base Management System (DBMS) used mainly for bibliographic applications."

This is very general statement which is often used to describe the MINISIS software. As one of the more experienced users in the Philippines, I often have been called to talk on MINISIS, what those at IDRC call as "outreaching", and describe the relative merits of the software. After determining the user requirements and convincing them that the software solution is indeed MINISIS, the next step would involve conducting the training course on the use of the software.

However, conducting the MINISIS training course is not easy due to the following factors:

a) Heterogeneity of users - This is the most difficult factor to contend with. The management of some organizations, in their attempt to computerize operations, send for MINISIS training people familiar with the application but do not have any programming/computer background. In my experience as a trainor, I have encountered students who have had nearly no computer background and some who are experienced database users belonging to the same class. The problem is then how to make the classroom environment interesting and understandable to both extremes to maintain their attention through the nearly two-week long training period. In one of the training courses that I had assisted in, the organizers required all students to have some computer training (EDP fundamentals, COBOL, etc.), and prior to training on the MINISIS processors, included a short course on database fundamentals (relational databases, terminologies, structures, etc.) The lecture/s on database fundamentals can be completed in about one morning, which, if necessary, can be extended to the afternoon of the first training day. In the event that all the students have adequate training and exposure to computers, then this can instead be replaced with a more technical lecture on the MINISIS database management system.

b) Complexity of software - Excluding the User Contributed Library (UCL), the MINISIS menu lists twenty-three differect processors. With the generally accepted practice of conducting a lecture on a single processor per

day (morning), it would take almost four weeks to complete a thorough course on the MINISIS software. And it is often happens that by the time the final processor has been discussed, the student may have forgotten the lecture on the first processor or is thoroughly tired and confused. The MINISIS training courses should be conducted not merely to describe the features of the software but should be aimed at assisting the user in the proper use of MINISIS in their application. It is therefore important to determine the user applications at the beginning and aim toward the goal of a running user application at the end of the training course. During one of the training courses I assisted in, at the end of the two-week training course, the students were made to present their applications using the MINISIS software. Such a practice is quite effective in ensuring that the students fully understand the capabilities and limitations of the software and in generating immediate results with respect to user applications.

From my own experience, the 80-20 rule of programming also applies itself to MINISIS: about five (5) processors (Datadef, Entry, Modify, Print, Query) are used 80% of the time. This being the situation, emphasis should be placed on these processors. It is possible that a MINISIS user will be thoroughly content with the software without having used the FIXXREF, SYNCOMP, or MINEDIT processors. The training period can thus be reduced. Should the user require these processors, the course can either be extended or he can refer to the manuals on these processors.

c) Varying applications - Although the MINISIS was originally created for bibliographic applications. this has not limited its use for other purposes. I have been able to develop payroll and inventory using the MINISIS. I presume that other users have more exotic applications. MINISIS should be viewed as a general purpose DBMS, not just for library/bibliographic applications. The use of the software is only limited by our imagination. What should be avoided, is over zealousness and the idea that MINISIS is the best solution to all the database applications.

For those are unable to attend the training course, studying MINISIS from the manuals is quite difficult. Although well written, reading and understanding the manuals require the user to have a general understanding of relational database systems. Also, it is quite easy to fall into some of the general pitfalls that the MINISIS novice experiences. The manual is excellent for the mature DB user, but not all users fall within this category.

I am hoping that IDRC can finally come up with a computer tutorial on the use of MINISIS. I believe that this can be done either by using the print processor or by writing a special program, or both. Such a tutorial will greatly assist in the training courses, and would result in shorter development times for users.

Incorporating all these, I would like to suggest a two-week schedule for the MINISIS training courses which was initially conducted by the De La Salle University in Manila for the IDRC:

DAY	TOPIC
0	Determination of user applications References: Organization plans & programs Systems analysis & design study
1	DBMS theory MINISIS overview/technical information Ref: DB Manager's Guide Technical Introduction User Introduction
2	DATADEF I: Creating the database User views: RD/PS Database types Record parameters Field parameters LISTDDT Ref: Datadef Manual
3	ENTRY: Inputting data Ref: Entry Manual
4	MODIFY: Modifying data Ref: Modify Manual
5	QUERY: Retrieving data Ref: Query Manual
6	PRINT: Reporting information LISTFORMAT Ref: Print Manual
7	INDEX: Reordering the reports Ref: Index Manual
8	INVERT: Creating fast access paths Ref: Datadef Manual Invert Manual
9	DATADEF II: Joining databases Ref: Datadef Manual
10	SUMMARY: User presentation

The MINISIS Applications of the

Government Archives Division

(1980-1988)

Freda M. Thompson

The National Archives of Canada

The National Archives of Canada established in 1872 is the repository responsible for acquiring, describing and preserving significant archival material relating to Canadian life. There is literally millions of manuscripts, photographs, films, maps, tapes, video recordings, books, paintings, drawings, prints and machine-readable and other records in her holdings. The National Archives is responsible for conserving Canada's archival heritage in the best possible condition and making it available to as wide an audience as possible.

The National Archives of Canada has been a MINISIS user since 1980 when the Government Archives Division developed its application. Now there are eight applications, three of which are presenting during this conference. The National Archives owned HP3000 is managed under a facilities management contract with Systemhouse Ltd.

The Government Archives Division

The Government Archives Division is responsible for federal government records in textual or computerized form considered essential to the present and future operation of the government and to general historical research.

The Government Archives Divsion has been involved in producing computer generated finding aids for research purposes since the early 1970's. A batch processing system RECODEX was used for which each project required new specifications.

In the late seventies a feasibility study was conducted to determine how an automated system could assist in handeling all the functions of the division, administrative, processing and the production of research tools. After considering the alternatives, hardware, software and system requirements it was decided to first of all concentrate on capturing the physical control of the collection. It was also decided that an off-the-shelf software package called MINISIS would meet our needs and was perferable to developing our own programs.

The divisions holdings in excess of 75 linear kilometes of records and are located in thirteen statelite storage facilities and regional record offices. The database controlling this information is the **Location and Access Database** called **F500M.** It contains almost a quarter of a million records which give the physical location, access status, unique barcode for each container.

The acquisitions which the division receives each year are assigned a unique number. As well as processing information such as date acquired, and processed a textual description is also captured. The database controlling this information is the **Acccessions Database** called **ACCE**. It contains only 3000 records with an average record length of 1000 characters but with the longest at 3974 characters.

The **Finding Aid Databases** called **FIND###** contain the file level descriptions for the records under the custody of the division. There are currently 54 databases with identical sturctures. These databases contain over one and half million records requiring varying outputs. The databases contain anywhere from 1000 records to the largest which has three quarters of a million records. It is in the dealing with the requirements of these databases which brought about the current management system, naming conventions and method of report generation.

U:\USR\FREDA\FEDDOCS\DICDBSE - last modified 88-07-26 by FMT

Data Base Dictionary Items

-this listing will continue to undergo changes as each database design is confirmed.
-the listing is in Alphabetical order.

DB NAME	TYPE	NAME - Purpose, comments
ACCE	RD	Accessions Database - Text and Processing info.
DSACCK	DS	Data Submodel of ACCE and KSAMs
DSF500K	DS	Data Submodel of F500M and all KSAMs
DSLANDK	DS	Data Submodel of FINDL15 and KSAMs
F500M	RD	Location and Access Database
FFAID	RD	Letter of Introduction Database - for finding aid projects
FIND###	RD	Finding Aid Databases - the ### refers to the Records Group Number. There is one for each records group for which we have a finding aid requirement. Consult the editor file LISTRD.DOCS for current list of Master databases.
FINDL15	RD	Land Description Database
FINDMIC	RD	Microform Catalogue Database - At this time the database replicats the "microform content map" as it was captured in the original F500M structure. At a later date the needs of the Microform Catalogue Database will be determined.
FINDTST	RD	TEST Finding Aid Database - This database is used by the Database Manager and Suzanne to enter test records for the purpose of testing print formats and demonstrations.
KBLD	RD	Authority File - Building Code
KFLR	RD	Authority File - Floor Code
KLML	RD	Authority File - LAND - Meridian Letter
KLRD	RD	Authority File - LAND - Range Digit

U:\USR\FREDA\FEDDOCS\DICDATA - last modified 88-07-26 by FMT

Data Dictionary Items

This listing contains field tags on all RD-Masters and all RD-KSAMs. For current detailed information on each field consult current LISTDDT or DATDEF VERIFY listings. For information on contents of DS's and PS's consult current LISTDDT or DATADEF VERIFY listing. A copy of these two listings are kept in the folder for the appropriate database (RD, PS or DS).

TAG	LENGTH	NAME - Associated databases, comments
A050	4	Record Group Number - validate KRGN -RD FINDMIC - invert RMIC -RD FIND### - invert R### -RD ACCE - invert RACE -RD F500M - invert R500
A110	16	Series Information (A-2-b) - validate KSRI -RD FINDMIC - invert SMIC -RD FIND### - invert S### -RD ACCE - invert SACE -RD F500M - invert S500
A120	500	Series Description (Eng) -RD ACCE
A130	500	Series Description (Fr) -RD ACCE
A140	10	Series Inclusive Dates - PATCHECK YYYY -RD ACCE YYYY-YYYY
A150	2	Section Code - validate KSCD -RD ACCE
A200	2	Record Type Code - validate KTYP -RD FINDMIC - invert TMIC -RD FIND### - invert T### -RD ACCE - invert TACE -RD F500M - invert T500
A220	2	Access Code - validate KRRC -RD FINDMIC - invert DMIC -RD ACCE - invert DACE -RD F500M - invert D500

FILE DICTIONARY

Filename	Groupnme	____	Comments

SUPER Group

CMPACR	.SUPER	AC02	- Accessions Register compute file
CMPACQ	.SUPER	AC01	- Acquisition Register compute file
CMPKEY	.SUPER	FA03	- Alphabetic Sort(Keywords) compute file
CMPNUM	.SUPER	FA04	- Numeric Sort(File #) compute file
GADOUT	.SUPER	AC06	- GAD Accessions Report (Yearly) file for downloading (ASCII format)
QRYAC	.SUPER	LA03	- Access Control List "C" query file
QRYACA	.SUPER	LA01	- Access Control List "A" query file
QRYACB	.SUPER	LA02	- Access Control List "B" query file
QRYACM	.SUPER	AC05	- GAD Accessions Report (Branch) query file
QRYACQ	.SUPER	AC01	- Acquisition Register query file
QRYACR	.SUPER	AC02	- Accessions Register query file
QRYBOX	.SUPER	FA02	- Boxlist query file
QRYKEY	.SUPER	FA03	- Alphabetic Sort(Keywords) query file
QRYLD	.SUPER	LA07	- Land Description Report query file
QRYMIC	.SUPER	FA05	- Microform Catalogue query file
QRYNUM	.SUPER	FA04	- Numeric Sort(File #) query file
QRYPFL	.SUPER	FA01	- Prooflist query file
QRYREG	.SUPER	LA04	- Microform Register query file
QRYROL	.SUPER	AC03	- Accessions Quarterly Roll-up query file
QRYSBS	.SUPER	LA07	- Shelf-by-Shelf Register query file
QRYSRE	.SUPER	AC04	- Selective Retention (English) query file
QRYSRF	.SUPER	AC04	- Selective Retention (French) query file
QRYTRH	.SUPER	FA06	- Targets & Running Heads query file
QRYTRS	.SUPER	LA06	- Beginning of Day query file
QRYYRL	.SUPER	AC06	- GAD Accessions Report (Yearly) query file
SRTAC	.SUPER	LA03	- Access Control List "C" sort file
SRTACA	.SUPER	LA01	- Access Control List "A" sort file
SRTACB	.SUPER	LA02	- Access Control List "B" sort file
SRTACM	.SUPER	AC05	- GAD Accessions Report (Branch) sort file
SRTACQ	.SUPER	AC01	- Acquisition Register sort file
SRTACR	.SUPER	AC02	- Accessions Register
SRTBOX	.SUPER	FA02	- Boxlist sort file
SRTKEY	.SUPER	FA03	- Alphabetic Sort(Keywords) sort file
SRTLD1	.SUPER	FA07	- Land Description Report sort file 1
SRTLD2	.SUPER	FA07	- Land Description Report sort file 2

****

An Overview of Circulation at the Joint Bank-Fund Library

MINISIS Users' Group Meeting, September 1988

Susan Turner

1. Background

The Joint Library serves both the World Bank and the International Monetary Fund staff. In an effort to better control the circulation of an average of 4,000 items per month, a program was developed. Following a year of preparation, the circulation system went into production in May 1987.

Since the Joint Library is a part of a network of libraries serving the Bank and the IMF, the requirements of all libraries were studied in order to design a system which could accommodate all of their needs. The basic circulation transactions which were common to all libraries included: loaning, returning, and renewing items as well as searching and placing holds on titles. The functions and program flow were tailed for most efficient and fast processing. The ability to assign different loan policies for each library was one of the major requirements from the network.

Barcoding the collection was the source of much discussion at our library due to the large amount of effort involved in implementation. Barcoding is not a requirement to run the circulation system since any unique identifier assigned to an item will work. However, once the links have been made, barcodes provide a more accurate method for data entry. We chose to use pre-printed sequentially numbered barcode labels. Since the library wanted to have as few items as possible coming to the circulation desk without barcodes, we also decided to barcode the entire library collection prior to implementation of the circulation system with the exception of newspapers and back issues of loose periodicals and working papers.

Parallel development of a program to immediately download cataloging records from OCLC network and upload to MINISIS was initiated in order to address the time lag factor with OCLC records arriving on a weekly tape. (The Online Computer Library Center - OCLC is the regional online cataloging network used in verification of cataloging information.)

Enhanced reporting features were required from the automated circulation system. The ability to produce different kinds of statistical reports, the automatic production of recall notices and the ability to produce reports such as a list of items currently borrowed by a patron are examples of the types of reports expected from the system.

2. Database overview

There are two main databases used by the circulation program. The HOLDINGS database holds the actual circulation information on items in the collection and the PATRON database contains information on library users. In addition, there is usually a bibliographic database from which the HOLDINGS records are created. At the Joint Library, we have three databases where circulating items reside: CATALOG (monographs and serials collection), BIBLIO (working paper series), and CHECKIN (current periodical issues).

HOLDINGS Database

Since there are multiple items per record in our bibliographic databases, a process had to be developed to create a HOLDINGS database which contained one record for each physical, borrowable item in the library collection.

CATALOG and BIBLIO both have repeatable subfielded fields for each physical piece and a barcode is assigned to each one. In CHECKIN, however, multiple copies of an issue are summarized within repeatable subfielded fields, so barcodes are programmatically appended and stored in one of the subfielded fields for each copy of an issue received. Several jobs run each night to pull all new barcoded items from the bibliographic databases and create new HOLDINGS records. The records are inverted and available for circulation the following morning.

One would need to look at the individual application to determine where the materials are that circulate and apply what works best to create the circulation HOLDINGS file. (see the IMF Circulation Processor Technical Document for description of fields.)

PATRON Database

The PATRON database is composed of personnel records from both the International Monetary Fund and the World Bank. Tapes are received weekly from the IMF Personnel and the World Bank Locator Systems and are applied in an automatic update process against the PATRON database. Changes in room number, phone number, etc. are identified and made, new staff are added, and departing staff are deleted from the PATRON database automatically. Staff deleted need to be searched in the HOLDINGS database to identify any materials still circulating so that library staff can take one last chance at getting the materials returned.

Direct entry is used for short-term consultants who never receive an official staff ID and is

used for institutions using the interlibrary loan privileges. These "direct entry" records are entered with a lower case organization code, which keeps them from being deleted in the automatic update process.

There are three key access fields defined in this database: staff ID, staff barcode number, and staff name. All fields are automatically updated except for borrower type and barcode number which allow for adjustments to be made by circulation staff and do not return to default value when the record is rewritten to the database.

3. Circulation Program and Functions

The CIRC program is a custom MINISIS processor which is fully compatible with other MINISIS processors and uses standard MINISIS databases. The circulation functions can be looked at as program macros which could be performed by using ENTRY and MODIFY commands. There is an external message file associated with the program which holds all program dialogue, database names, field tags, and the table of values for loan and recall periods.

The functions supported include lending an item (CHARGE), returning an item (DISCHARGE), renewing an item (RENEW), searching the PATRON or HOLDINGS databases (QUERY), placing holds on a particular title (WAITLIST), adding a barcode to a PATRON record (BARCODE), and updating the PATRON or HOLDINGS database. QUERY can be accessed from within other functions as well as directly as its own function.

In the CHARGE function, the program prompts first for borrower number. The user must supply either the borrower number (barcode), a valid staff id., or query the PATRON file by last name to find one of these numbers. Once the borrower number is accepted, the program displays the borrower name for confirmation and (unless the user types "NO" to reject this patron record and restart the process) prompts for successive item numbers, until the user indicates no more items by entering "end". The program displays each item's title and volume/copy information as it processes the item. For each item, CIRC computes a due date based on the holding library, the type of material, and the borrower type (matching these values to a rule in the loan table) and updates the appropriate HOLDINGS record with borrower and due date information as well. The status of CIRC is also assigned to the record and recall parameters are added. The user can override the due date computation by entering an asterisk (*) in front of the borrower number. In this case the program will prompt for a due date (in format YYYY-MM-DD) for each item charged to that borrower. In any case, the program displays the assigned due date.

The DISCHARGE function prompts the user for an item number. The program displays each item's title and volume/copy information as it discharges the item. If a waitlist exists for the

item, the program will display a message to this effect and beep to alert the user. For each item discharged, the function records the discharge date and adjusts the item's circulation status. Key transaction information is also transferred to the archival fields for statistical purposes.

The RENEW function prompts for the item number. One may side step to QUERY if the item number is not known. If the item is waitlisted, the renewal is rejected. If the item cannot be renewed or the patron has reached the renewal limit, the renewal is rejected. If the renewal is accepted, the renewal count is incremented and the latest due date is changed to reflect the renewal. The program displays the record with the new due date.

The WAITLIST function allows waitlist information to be stored in the copy 1 record only. After the ISN of copy 1 has been entered, anyone can be added or deleted from the waitlist. Waitlist notes are also accepted. The program finds all copies of an item by searching the root information field, adds the name(s) to copy 1, and changes the status to CIRC or HOLD.

The BARCODE function allows one to quickly add a barcode to a patron's record when either replacing or adding a new barcode to a staff identification card.

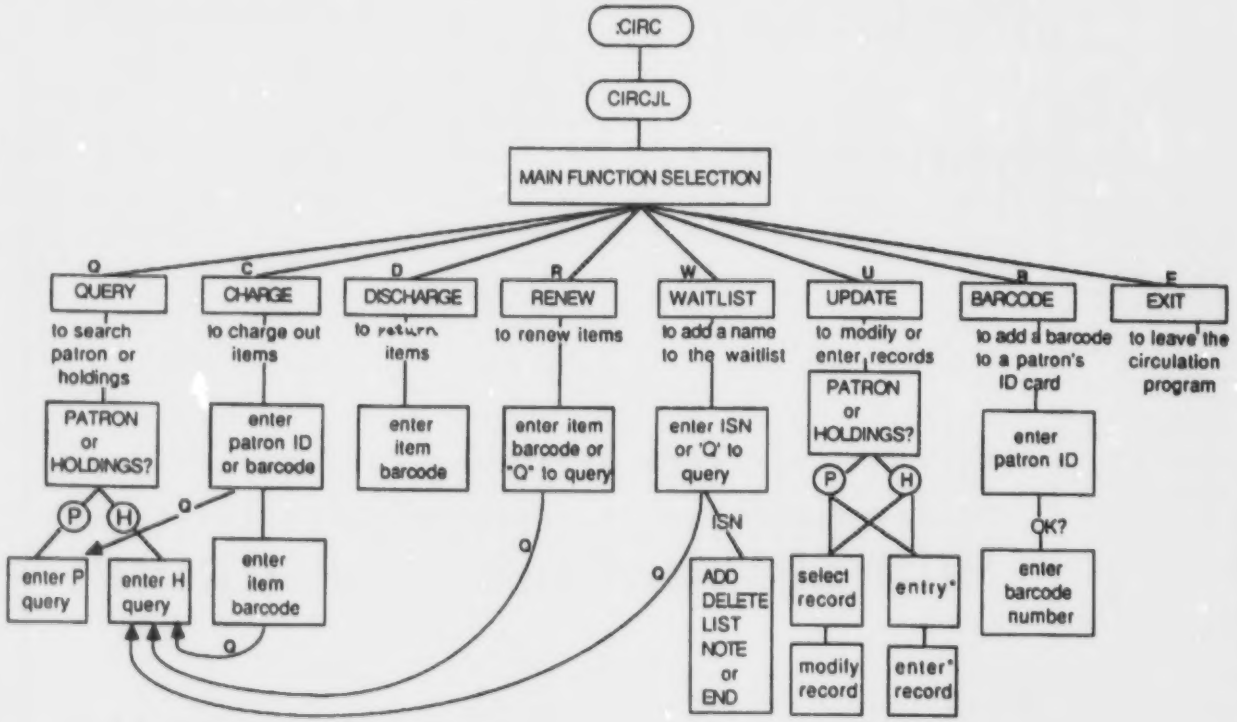
QUERY and UPDATE functions are also available to allow searching and modify of the HOLDINGS and PATRON databases within the circulation program.

4. Reports

The reporting functions are implemented through the use of MINISIS INDEX, COMPUTE, and PRINT and MPE FCOPY. The recall parameters, with today's date, are compared with the due date for "overdues" testing and with the date circulated for "waitlist" testing. Regular monthly statistics are produced by type of item (i.e. books, periodicals, working papers) and within type of item by organization, department, and division. Collection development reports are also produced for statistics by classification number over a specified period of time. The number of times each periodical title circulates is also reported. Older archival information used for statistical reports can be removed from the database at any time and accessed through back files for retrospective reporting.

8/29/88
CIRC. CHART

CIRCULATION PROGRAM DIAGRAM



SAT, SEP 10, 1988 LISTDDT DATA DEFINITION

FIELD NAME	MNEMONIC	TAG	O F F S E T	L E N G T H	N D U E C I R C L	E U P D E	R E P E A T	S R A D	P E A T	N O N P R O C	D U P L	V A R I E S	P A R T I A L	I N D E X	I N V E N T	I N V E N T	I N V E N T	I N V E N T	U N I Q U E	T Y P E	L E N G T H	S U P P R E S S	S O R T	A L P H A	I N D E X	V A L I D	L O O K U P	E D I T	E D I T	R E Q U I R E D	I N D E X	L E V E L	A U T H O R I T Y	E X P O R T	I M P O R T	A U D I T	E N C R Y P T
*** Database : HOLDINGS																																					
RECORD CREATION DATE	CREATD	L010	-1	10				Y	Y																										Y		
RECORD STATUS	STATUS	L100	-1	6				Y	Y			Y		B	1		6							HLDA	Y												
CHARGE DATE	CHARGD	L110	-1	10																															Y		
LAST UPDATE	UPDATD	L120	-1	10																															Y		
DISCHARGE DATE	RETRND	L130	-1	10																															Y		
ORIGINAL DUE DATE	ORDUED	L140	-1	10								Y		B	1		10							HLDW	Y												
LATEST DUE DATE	LTDUED	L150	-1	10								Y		B	1		10							HLDW	Y												
HOLDING LIBRARY	HLIB	L250	-1	4			Y					Y		B	1		4							HLDR	Y												
JLB ISN	JLBISN	L160	-1	6			Y					Y		B	1		6							HLDB	Y												
JLC ISN	JLCISN	L170	-1	6			Y					Y		B	1		6							HLDC	Y												
CHECKIN/JLP ISN	JLPISN	L180	-1	6			Y					Y		B	1		6							HLDD	Y												
ROOT INFORMATION	RTINFO	L260	-1	40			Y					Y		B	1		40							HLDI	Y												
AUTHOR	AUTHOR	L270	-1	200		Y	Y					Y		B		990	V	40	M					HLDE	Y												
ITEM TITLE	TITLE	L200	-1	400		Y	Y					Y		B		990	V	40	M					HLDE	Y												
WORKING PAPER SERIES TITLE	WPTITL	L290	-1	200								Y		B		990	V	40	M					HLDE	Y												
LOCATION	HLOC	L280	-1	20			Y																		Y												
CALL NUMBER	LCN	L390	-1	58		Y							Y	B	1		50							HLDO													
GEO CODE	GEO	L391	-1	4			Y						Y	B	1		4							HLDQ	Y												
CLASSIFICATION #	CLASSN	L392	-1	20			Y																		Y												
BOOK NO	BOOKNO	L393	-1	40			Y																		Y												
ITEM CALL NUMBER	CALLNO	L240	-1	60									Y	B	1		40							HLDH	Y												
VOLUME IDENTIFICATION	VOLID	L220	-1	30			Y					Y		B	10	W	20							HLDG	Y												
COPY NUMBER	COPY	L230	-1	10			Y					Y		B	1		10							HLDN	Y												
ITEM NUMBER (BARCODE)	ITEMNO	L210	-1	10			Y					Y		B	1		10							HLDF	Y												
BORROWER NUMBER (BARCODE)	BNUM	L300	-1	12								Y		B	1		12							HLDJ	Y												
EMPLOYEE/GROUP ID	EMPID	L310	-1	12								Y		B	1		12							HLDJ	Y												
BORROWER NAME	BNAME	L320	-1	40																					Y												
ORGANIZATION	ORG	L330	-1	4																					Y												
DEPARTMENT	DEPT	L340	-1	4																					Y												
DIVISION	DIV	L350	-1	2																					Y												
ROOM #/ADDRESS LINE	ADDR	L360	-1	40		Y																			Y												
PHONE NUMBER	PHONE	L370	-1	20																					Y												
BORROWER TYPE	BTYPE	L380	-1	6																					Y												
WAITLIST FLAG	WTFLAG	L400	-1	2																					Y												
NUMBER OF RENEWALS	RENEWS	L410	-1	4																					Y												
LAST RENEWAL DATE	LRNEWD	L420	-1	10																					Y												
OVERDUE FIRST RECALL	ODONE	L430	-1	2																					Y												
OVERDUE SECOND RECALL	ODTWO	L440	-1	2																					Y												
OVERDUE RECALL COUNT	ODCNT	L450	-1	2																					Y												
WAITLIST FIRST RECALL	WTONE	L460	-1	2																					Y												
WAITLIST SECOND RECALL	WTTWO	L470	-1	2																					Y												
WAITLIST RECALL COUNT	WTCNT	L480	-1	2																					Y												
CIRCULATION COUNT	CRCCNT	L490	-1	4																					Y												
WAITLIST INFORMATION	WTLIST	L500	-1	120		Y	Y																														

SAT, SEP 10, 1988 LISTDDT DATA DEFINITION PAGE 2

FIELD NAME	MNEMONIC	TAG	T	H	O F F S E T	L E N G T H	N D I P C L	R E C D T Y P E	S U B R E C	P H Y S I C A L	D B K E Y	V I R T U A L	I N D E X	I I I I I I I	I N D E X E S	I N D E X R R	T Y P E	L E N G T H	S S A N E S T	P F F S E T	I N D E X E S	F L D L E N	L V L O C A T	C F L D L E N	A R R A Y	E X T I T Y
WAITLIST BORROWER NAME	VBNAME	L501	-1	40																			Y			
WAITLIST EMPLOYEE/GROUP ID	VEMPID	L502	-1	12									Y		B	I		I2				HLDK	Y			
WAITLIST ROOM NUMBER	VROOMN	L503	-1	12																			Y			
WAITLIST PHONE NUMBER	VPHONE	L504	-1	20																			Y			
WAITLIST NOTE	VNOTE	L505	-1	40																			Y			
WAITLIST DATE	VDATE	L506	-1	10																			Y			
ARCHIVAL INFORMATION	ARCHIV	L600	-1	40		Y	Y																			
ARCHIVAL ORGANIZATION	ADRGN	L601	-1	4																			Y			
ARCHIVAL DEPARTMENT	ADEPT	L602	-1	4																			Y			
ARCHIVAL DIVISION	ADIVN	L603	-1	2																			Y			
ARCHIVAL BORROWER TYPE	ABTYPE	L604	-1	6																			Y			
ARCHIVAL CHARGE DATE	ACHRGD	L605	-1	10																			Y			
ARCHIVAL RENEWAL COUNT	ARNWCT	L606	-1	4																			Y			
ARCHIVAL DISCHARGE DATE	ADSCHD	L607	-1	10																			Y			
ARCHIVAL RENEWAL DATE	ARENWD	L608	-1	10																			Y			
CIRCULATION NOTES	CNOTES	L700	-1	200		Y																	Y			
STATUS SAVE FIELD	STATSV	L510	-1	6																			Y			
TRANSACTION DATE	TRDATE	L520	-1	10											Y	B	I	I0				HLDP				

SAT, SEP 10, 1988 LISTDDT DATA DEFINITION PAGE 1

FIELD NAME	MNEMONIC	TAG	T	H	O F F S E T	L E N G T H	N D I P C L	R E C D T Y P E	S U B R E C	P H Y S I C A L	D B K E Y	V I R T U A L	I N D E X	I I I I I I I	I N D E X E S	I N D E X R R	T Y P E	L E N G T H	S S A N E S T	P F F S E T	I N D E X E S	F L D L E N	L V L O C A T	C F L D L E N	A R R A Y	E X T I T Y
*** Database : PATRON																										
EMPLOYEE/GROUP ID	EMPID	#110	4	12			Y	Y		Y		K										ROUT				
ORGANIZATION CODE	ORG	#120	10	2			Y																			
EMPLOYEE/GROUP NAME	EMPNAM	#140	29	40			Y	Y		Y		K														
ROOM NUMBER	ROOMNO	#150	60	12			Y																			
DEPARTMENT	DEPT	#300	72	4			Y																			
DIVISION	DIVN	#310	76	2			Y																			
BANK TITLE CODE	BTITLE	#320	78	2			Y																			
FILLER	FILL1	#400	80	2																						
BORROWER NUMBER	BRNMUN	#500	82	12			Y	Y		Y		K														
BORROWER TYPE	BRRTYP	#510	94	10			Y																			
APPT EXPIRATION DATE	APPTXP	#520	104	10			Y																			
TYPE OF APPOINTMENT	APPTTP	#530	114	10			Y																			
ILL ADDRESS 1	ILL1	#600	124	40			Y																			
ILL ADDRESS 2	ILL2	#610	164	40			Y																			
ILL ADDRESS 3	ILL3	#620	204	40			Y																			
PHONE NUMBER	PHONE	#630	244	14			Y																			
ENTRY CODE	PENTRY	#640	258	4			Y																			
FILLER	FILL2	#900	262	80																						

IMF Circulation Processor

Technical Document

Introduction

This document describes the technical aspects of the IMF Circulation processor (CIRC). The end-user functions of CIRC are described in a separate document and are referred to here only in reference to the program's internal processing.

As with the IMF CHECKIN processor, CIRC supports and works on a standard MINISIS data base. All the program's functions can be performed in MODIFY and ENTRY; CIRC just performs certain defined functions much faster. CIRC performs inversion, validation, transaction logging as the other processors do.

Please note that the version of CIRC described here (B.00) is not fully configurable by the user. Certain syntax and parameters are hard-coded. In particular, the file of patrons has its structure hard-coded into the program. It is possible that future versions will be fully configurable.

Again, as with the CHECKIN processor, CIRC does not support any reporting functions directly (such as overdue notices or recall notices). The reason is the same: the requirements for such functions tend to evolve over time even within a institution and it is therefore not cost-effective to program them when INDEX, COMPUTE, and PRINT will accomplish the same result.

HOLDINGS Data Base

CIRC operates on two MINISIS data bases. The first is a file of circulating items, called HOLDINGS in this document. The HOLDINGS data base contains one record for each physical piece that is available for circulation. Because of the large number of fields used by CIRC, it is not feasible to maintain (for instance) all copies of a title within one ISN, convenient though this would be. The section below on waitlisting describes how CIRC links the various copies of a title.

The HOLDINGS data base is defined with autonumbering on to support the CREATE command in the UPDATE function.

Record Creation Date (Default tag L010)
Date record created. Stored in YYYY-MM-DD format.

Record Status (L100) Inverted
Circulation status of record.

Values used by CIRC:
AVAIL - item available for circulation
CIRC - item circulating
HOLD - item present but waitlisted - can't be borrowed
WAIT - item circulating but waitlisted

CIRC will allow other status codes, but will charge only AVAIL items.

Charge Date (L110)
Date item charged out.

Last Update (L120)
Date record last modified by CIRC. Automatically replaced.

Discharge Date (L130)
Date item last returned.

Original Due Date (L140)
Due date assigned when item borrowed.

Latest Due Date (L150)
Due date assigned at latest renewal.

Holding Library (L250)
Code representing the group which holds the item.
Used in calculating loan periods etc. Can be the same for all items.

Root Information (L260)
Contains information common among all copies of a title (eg call #).
Used by the waitlist function to link all copies of a title.
See discussion of waitlist below.

Holding Location (L280)
Location of the item within Holding Library.
Used in calculating loan periods.

Copy Number (L230)
Copy number of multiple copies of a title.
Used by the waitlist function. See discussion below.

Item Number (L210)
Unique identifier of an item (eg inventory barcode number).
Used throughout the program to retrieve items.

Borrower Number (L300)
Identification number of current borrower of the item.
Corresponds to borrower number in the PATRON data base.

Employee ID (L310)
Staff ID number of current borrower of the item.
Corresponds to employee ID in the PATRON data base.

Borrower Name (L320)
Corresponds to employee name in PATRON.

Borrower Organization Code (L330)
Corresponds to organization code in PATRON.

Borrower Department (L340)
Corresponds to department code in PATRON.

Borrower Division (L350)
Corresponds to division code in PATRON.

Borrower Address/Room Number (L360)
Corresponds to addess line in PATRON.

Borrower Phone Number (L370)
Corresponds to phone number in PATRON.

Borrower Type (L380)
Corresponds to borrower type in PATRON.

Number of Renewals (L410)
Count of renewals by current borrower.

Last Renewal Date (L420)
Date item last renewed.

Waitlist Information (L50n)
CIRC maintains an occurrence for each patron waiting for the item.
Subfields: Borrower name
Employee ID
Room number
Phone number
Note
Date entry added
The first four subfields are taken from PATRON.

Archival Information (L60n)
When an item is returned, CIRC records circulation history.
Subfields: Organization
Department
Division
Borrower type
Charge date
Renewal count
Discharge date
Renewal date

Status Save Field (L510)
Used to preserve non-standard status codes while item is waitlisted.

PATRON Data Base

This is a KSAM data base of patrons or clients of the circulation system. In this version of CIRC (B.00), the structure and contents of PATRON are hardcoded in the program. The file is accessed by CIRC not as a MINISIS data base, but as a KSAM file via MPE intrinsics. The contents of PATRON are as follows.

Employee ID (12 characters, key field).
Unique identifier such as staff ID number.

Organization Code (2 characters)
Identifies organization of patron.

Employee Name (40 characters, key field).
Name of individual or group.

Room Number (12 characters).
Patron's address.

Department (4 characters)
Code for patron's department.

Division (2 characters)
Code for patron's division.

Filler (4 characters)

Borrower Number (12 characters, key field)
Unique identifier, such as an assigned barcode number.
Can repeat the employee ID if this is the only identifier.

Borrower Type (10 characters)
Used to distinguish different types of borrower.
Used in calculating loan periods.
CIRC processes only the first 4 characters.

Filler (140 characters).

Phone Number (14 characters)
Patron's phone number.

Filler (84 characters)

Waitlist Processing

The HOLDINGS data base consists of item information, which is what CIRC processes most of the time. The exception to this rule is waitlist processing. In this case, processing is done at the bibliographic level; that is, a patron doesn't care which copy of a title he gets.

In order to maintain a waitlist against all copies of a title, CIRC must link them together. To do this it uses the Root Information (L260) and Copy (L230) fields. The Root field must contain information which is unique to a particular bibliographic item. A trivial example might be title. It could be necessary to concatenate several fields together (eg. call #, volume #) to generate this field. The objective is to allow CIRC to perform a query on this field and find all the copies of a particular bibliographic item.

The other necessary field is Copy. CIRC maintains the waitlist for an item in the record for copy 1 of the item. It cannot build a waitlist unless copy exists.

CIRC will automatically adjust the status code of any item which is waitlisted, assigning WAIT or HOLD depending on whether the item is circulating or sitting in the stacks. As the waitlist is cleared, CIRC will restore the status code to AVAIL or CIRC or any special value that was there previously.

Loan Period Calculation

CIRC lets you define a set of rules in the message file which describe the loan and renewal periods for various combinations of item and patron attributes.

These rules are stored in the message file in increasing order of specificity; that is, the most general rule is found first (ie. the rule that describes any patron and any item) and the most specific rule is found last. CIRC starts with the last rule and works backward until it finds a rule which covers the particular item and patron.

In the item, CIRC looks at holding library and holding location. In the patron record, CIRC looks at the borrower type. When CIRC finds a parameter record that matches these three values, it processes the charge using the loan period, etc. defined for this rule.

Note that CIRC supports a "wildcard" similar to that of MPE. The commercial at sign "@", when used in a rule, means "any value for this field (eg. borrower type) will satisfy this rule". The first and most general rule should therefore contain the "@" in the positions for holding library, holding location, and borrower type in order to ensure that there will always be a rule for every charge transaction.

CIRC Message File

The CIRC message file is stored as CRCMESS.PUB.MINISIS. CIRC opens the file as CRCMESS.PUB.MINISIS, but the file's name or location can be re-directed with a file equation.

The file is stored as a numbered EDITOR file. Line 0.1 is a comment line. Lines 1 through the end of file are stored as whole numbers, each corresponding to a message or parameter number. Since CIRC reads the message file as 0-relative records, it is critical that the records not change their positions relative to the beginning of the file. Therefore, never add or delete lines when modifying this file; use only modify or replace commands.

Each message file line contains a message or parameter value terminated by a backslash (\), followed by optional comments. When changing or replacing a message, ensure that it is terminated with a backslash.

Lines 150-190 - loan period parameter table
- refer to previous discussion of loan period calculation
- cc 1- 4 - Holding Library
5-10 - Holding Location
11-14 - Borrower Type
14-20 - reserved
19-20 - Loan Period (99=unlimited)
21-22 - Days till first overdue
23-24 - Days till second overdue notice
25-26 - Days till waitlist recall notice
27-28 - Maximum renewals permitted

- Note that cc 21-26 are not used by CIRC directly

Line 199 - Fully qualified name of KSAM file containing PATRON data base. Terminated with a space.

Line 201 - HOLDINGS data base name. If blank, CIRC will prompt for data base name.

Line 202 - Print format for HOLDINGS data base. Note that waitlist entries are displayed by CIRC directly, not through the print format.

Line 204 - Maximum record (tuple) size. Version B.00 will not support a record larger than 4K bytes.

Line 206 - MINISIS processor number. Default value is 16, which corresponds to line 1364 of MESSOn. If this is already allocated, you can change the processor number to point to a different processor number.

Lines 269-280 - Help information displayed at the main menu.

Lines 301-360 - Tags used by the CIRC program. Many of these fields are optional. Any tag can be replaced with the tag used in your application.

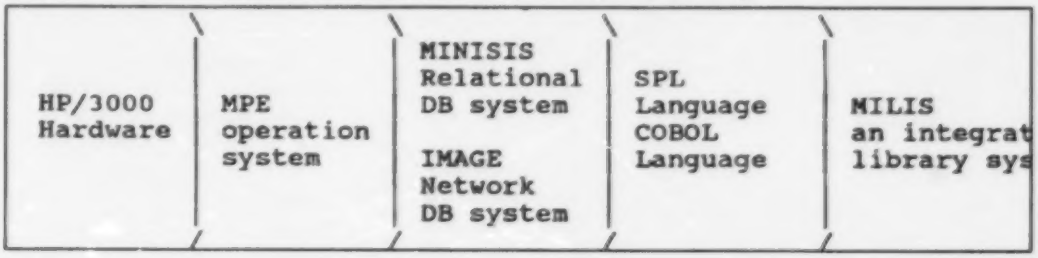
REPORT OF INTEGRATED LIBRARY SYSTEM

YAN CHUN
SHANGHAI JIAO TONG UNIVERSITY
SHANGHAI, P.R.CHINA

I. GENERAL

MILIS is a generalized integrated library system. It runs on any series of HP/3000 computer, and is mainly based on MINISIS, a DBMS, some people think of it as an integrated set of information system, because MINISIS contains so many information concepts in its design thinking, such as variable field (most important concept), interactive, index and inverted file, thesaurus, etc. And another DBMS IMAGE is also used.

We use the processor of MINISIS mainly to develop each function of library operation, but in order to realize some operations with a little speciality, we may write program in SPL language (system programming language) for them. MINISIS supports many intrinsics which are flexible tools. And the program separable from main operation is written by us in COBOL. Therefore, the position of our system is just as following:



There are six subsystems in MILIS: 1) Acquisition, 2) Catalog, 3) Circulation, 4) Serials control, 5) Public access and 6) Financial management. Upon this system, we plan to develop interlibrary loan and union catalog too.

According to the response time, we suggest that this system should be used in small or medium libraries, such as that owning ____ million copies of collection and 20 thousands patron. Although we use so many parameters in this system, they can be adjusted while installed in a certain library, so that system is available to any kind of library.

II.DATA RESOURCE

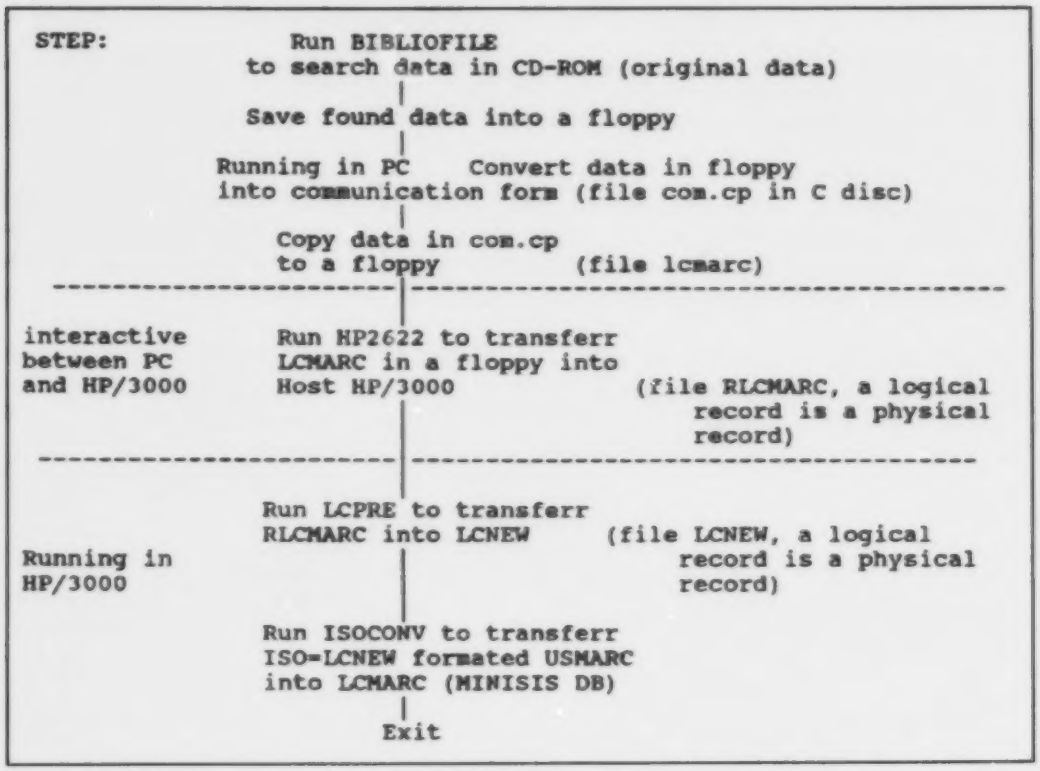
The great advantages of integrated system is resource sharing, and the system should remains good quality and authority of data. So we have two main data resources. One is data formatted USMARC tape (disc) or other media, we should fill a work sheet, but if we find relevant data later, we should replace old data with new one.

And for general operation of library, we design some work sheet (showed in every relevant subsystem).

1. Data stream

For western book, we can get data from LC (library of congress), now we use CD-ROM (Compact Disc-Read Only Memory), and for chinese book, we plan using Chinese MARC from Beijing Library, which is our national library. It's said that chinese MARC will be release in 1988.

To operate a CD-ROM system we need a compact disc, a CD-ROM drive (it may include a locking device to secure the disc), an IBM personal computer or an IBM-compatible personal computer, CD-ROM producer's software and a printer:



2. MARC format

USMARC (LCMARC) formatted will be used in MILIS. Although UNIMARC is an international standard record format, many countries have agreed to adopt UNIMARC as their exchange format, but the data resource we are able to obtain is only the collection of records formatted in USMARC so far.

Of course, if some libraries want to use data formatted in UNIMARC, what we should do is changing the definition of CD (such as CDLC-MARC now. All operation jobs and other performance do not need to change, because we use Tag in MINISIS compatible with UNIMARC and USMARC), not Tag in USMARC. So for MARC format, this system is also of some generality.

III. FACILITY

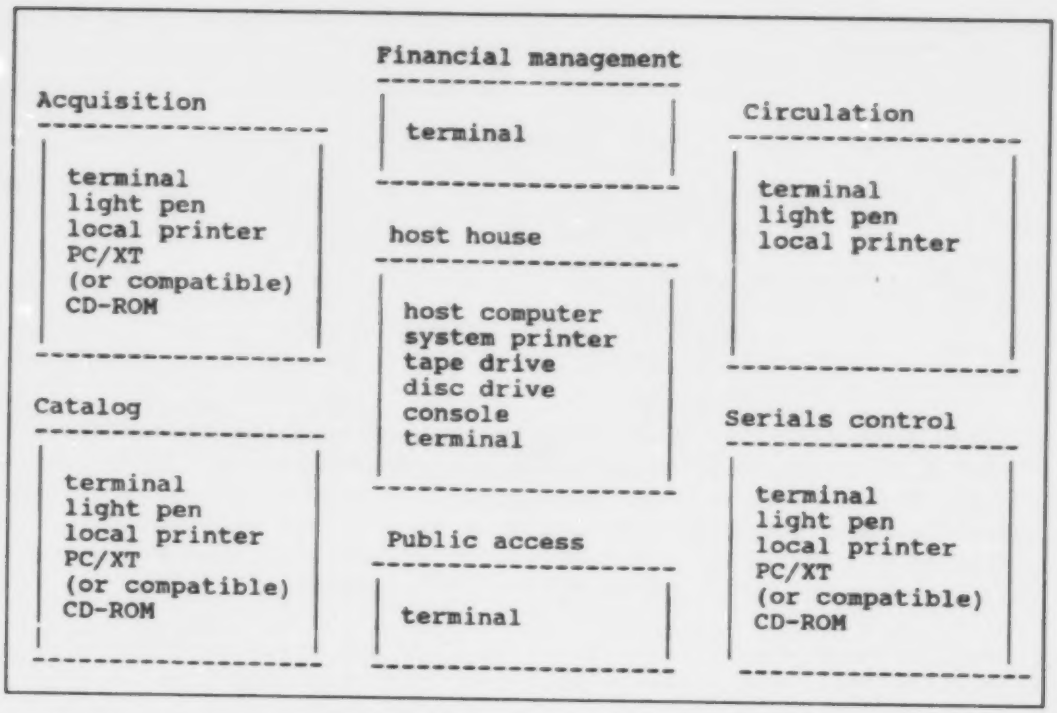
1. Hardware

MILIS can run on any series of HP/3000, and in order to realize some special functions,it's needed to have some more external devices, see chart below:

Of course, some devices, such as CD-ROM, can be shared if no so much fund available for this system to provide them.

2. Software

HP/3000:



MPE (operation system)
MINISIS (Relational DBMS)
IMAGE (Network DBMS)
VPLUS/3000
EDIT
FCOPY
SORT-MERGE
Language: SPL, COBOL

PC/XT:

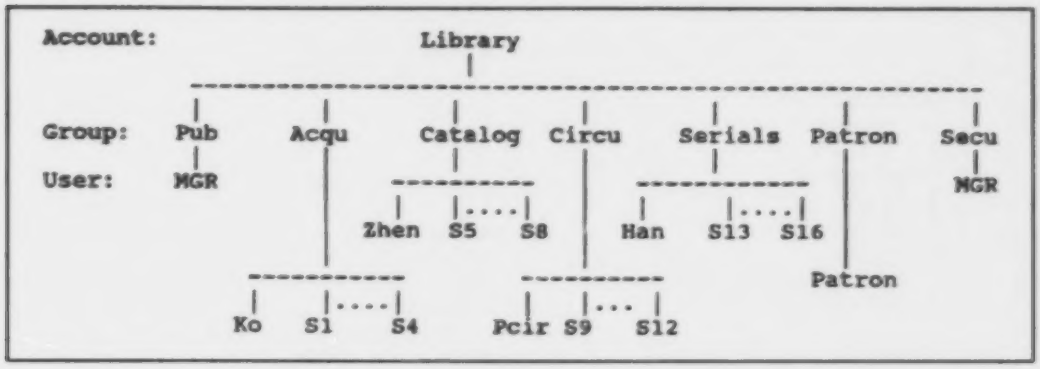
DOS
BIBLIOFILE (Supported by Library Corporation from U.S.A.)
HP2622 (supported by IDRC)

IV. ACCOUNT STRUCTURE

Account structure in MILIS is just as following:

Among them, every group belongs to a subsystem, that is, Acqu, Catalog, Circu, Serials, Patron are for Acquisition, Catalog, Circulation, Serials control, Public access. A file called SECUKEYD is located in group Secu and used for activating the security in Library account.

Obviously, a file in group Pub is accessible by every users in account Library. In order to implement resource sharing, and to reduce the amount of input, we must have some public data, that means the files used for more than two subsystems must be located in pub group. And all DBs about financial are set in pub group.



And for security of MILIS, there are two methods. First, a user can't see the main menu of MINISIS, so he can't select the processor, but select the function he need, that determines how many and which processors he will use. Second, every user has different authority. MGR is the account manager, it has the highest authority. Others, KO, Zhen, Pcir, Han are group managers. All users above can drive processors in MINISIS. But other users, from s1 to s16 and Patron called end-user, will be restricted to certain processors. It's determined by the operation request, e.g. the processors the user Patron can use the QUERY, INDEX, PRINT.

All the security about processors is recorded in SECUKEYD file, which is created by MGR. And some processors are used only by the DBmanager, such as DATADEF, LISTDDT, LISTFORMAT,...

If this system is installed in a certain library, they must have some specialists trained, who will maintain the system running smoothly.

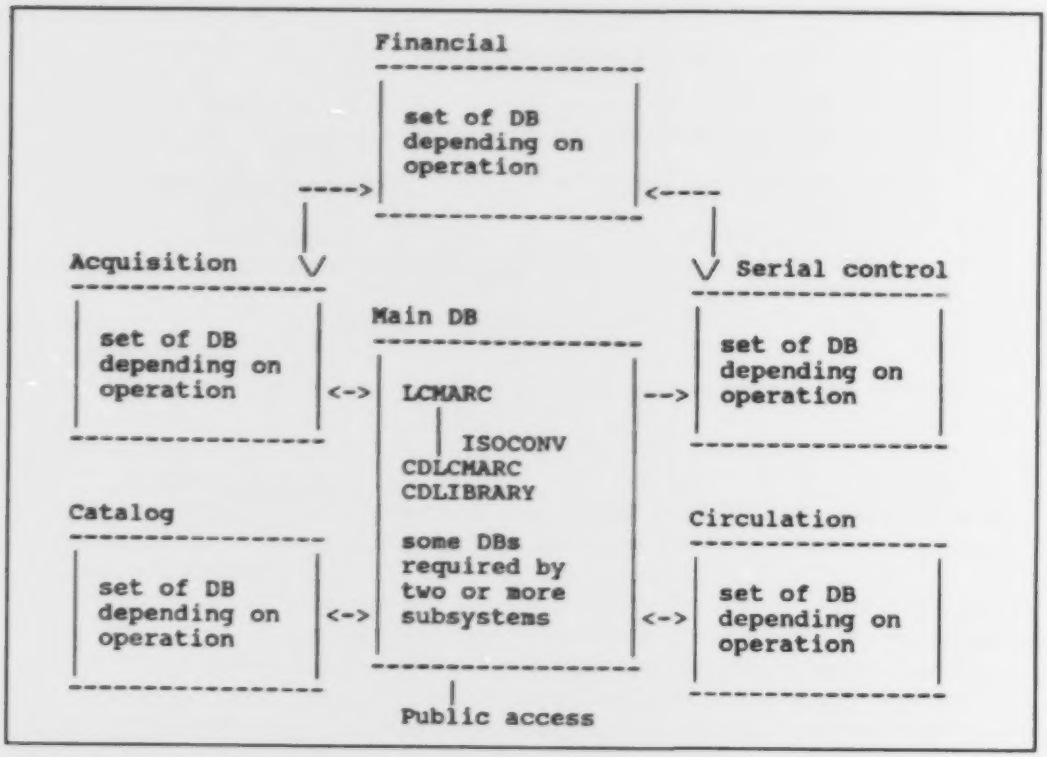
V. DISTRIBUTION OF DB

Because MILIS is an integrated system, there may be some requests of communication between two or more DBs. During the system design we create DB in one DD file. Every DD file can contain 800 DBs.

The main DB of collection is LCMARC, another DB CDLMARC is used for ISOCONV. LCMARC includes data of books and serials owned by library. For books and serials ordered, but not received, we think them as process data and locate them in relevant DB. So there are so many DBs in a subsystem. Every DB depends upon different functions.

Because the maximum number of fields in a MINISIS DB is 256, and that of subfields in a subfielded field is 9. We use MARC-EXIT to expend the capability of MINISIS. In ISOCONV, we look a subfielded field as a elementary field, and every subfield is separated by delimiter. When printing a subfielded field, subfield can be separated by delimiters or colon.

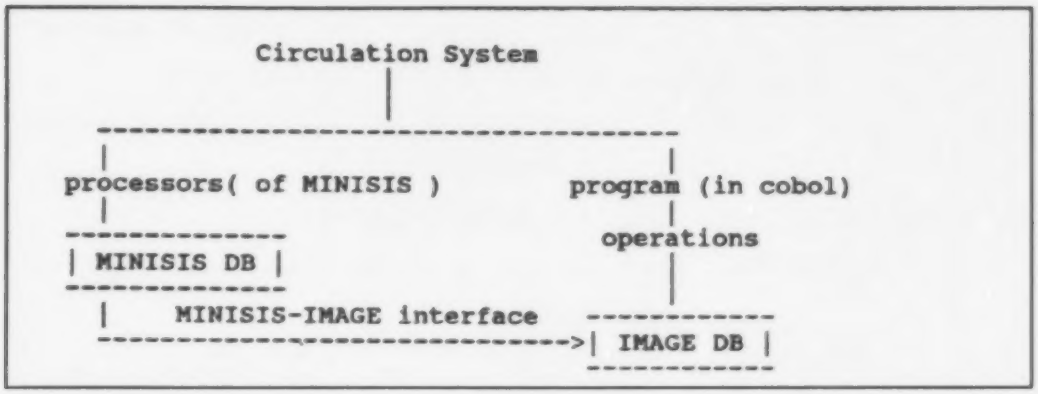
Although we use standard USMARC, sometimes, we need some subfields print alone, that means subfields in one subfielded field may print in different place. In order to do that, another CD is created, named as CDLIBRARY. In CDLIBRARY, every subfield needed to print alone is defined alone.



VI. MINISIS-IMAGE Interface

As we known, relational DBMS is stronger in data structure, and network DBMS is stronger in response time. Although there are so many network concepts in MINISIS, comparatively, the response time is slower because of the variable length of data. Now we use the interface MINISIS-IMAGE supported by IDRC to improve the performance of MILIS.

In circulation system, the more important performance is response time because we can use Public Access to search the status of every item in the collection,d the data structure in circulation can be very simple, such as fixed length. So we run program based on IMAGE DBMS for some operations. Of course, there are communication between MINISIS DB and IMAGE DB. See chart below



According to same idea, we design the financial system. All operations about financial management are run through a program separated from MINISIS, and all DBs about financial management are structural in IMAGE.

VII. FUNCTIONS

Acquisition:

1) Reference and query.
2) Prorder duplicate check.
3) Order.
4) Receiving.
5) Exchange and donation.
6) Print claiming slip.
7) Collection development analysis.
8) Statistics.

Catalog:

1) Duplicate checking.
2) Automatic cataloguing.
3) Original cataloguing.
4) Record revision.
5) Catalog production.
6) Holding Management.
7) Public access.
8) Statistics and report generation.
9) Authority control.

Circulation:

1) General operation (charge, renew, discharge, overdue, fine, handling, hold).
2) Patron maintenance (register, update, delete and browse)
3) Overnight process (notice, statistic report, etc.)
4) Staff search.
5) Patron search.

Serials control:

1) Cataloguing.
2) Check-in.
3) Statistics analysis.
4) Acquisition.
5) Public access.
6) Report generation.

Public access:

The user can search records in the collection through logical operation.

Financial management:

1) Registration
2) Modify
3) Query
4) Creating
5) Printing

VIII. CHARACTERISTICS

The characteristics of MILIS are:

1) It's a generalized system.
2) To keep good quality and authority of data, and DB is available to different data resource.
3) Friendly interactive by screen design (using VPLUS/3000) and help function.
4) Resource sharing, and data transferring automatically.
5) Not only is subsystem a branch of an integrated system, but it can run alone.
6) The length of field is variable, so it can fully show every kind of attribution of book and serials.
7) If needed, the data in MILIS can be authorized automatically, and authority file can be updated immediately when entry.
8) Parameters in MILIS can be adjusted to the any king of library policy and condition, and the capability of MILIS can be expended easily.
9) The functions are fully suitable to the need of library.
10) Security method makes MILIS safe and user flexible.

J. Shubitowski
Canadian Centre for Architecture
Montréal, Canada

I am very pleased to be at my second Minisis Users Group meeting; last year I felt like I was just an observer, but this year I feel like I am truly a participant. I must say that our first year as Minisis users has gone fairly smoothly and there has not been a problem that we have not been able to overcome ourselves or with a little help.

Before I begin my brief discussion of our database structure, I feel an institutional introduction is in order.....I, and my colleagues in the audience, are from the Centre Canadien d'Architecture/Canadian Centre for Architecture in Montreal. CCA is a private museum and research centre devoted to the study of architecture and the built environment in its broadest sense. CCA was founded in Montreal in 1979 and is just now completing construction work on its new facilities. There are four major object collections: Photographs - approx. 45,000 master prints, Prints and Drawings - approx. 8000 sheets, Archives - approx. 143,000 drawings, blueprints, etc., 20,000 photographs, 23 maquettes, and 378 linear metres of textual documents, and the Library - approx. 120,000 volumes. All collection material must have architecture as its primary subject. These objects have all been brought together in a relatively short time frame, so we obviously are faced with a rather huge backlog of cataloguing.

The CCA is using Minisis as the backbone for its object cataloguing and collections management information system. It is/will be used by all staff and also members of the general public when they visit the CCA. I say "will be" because while all of the collections staff are ensconced in their new quarters in Montreal, the computers are still housed in the old building awaiting completion of the new computer room. Needless to day this is frustrating for all parties concerned. Cataloguing of the object collections (excluding the Library now) began in the Photography collection when it was housed in New York City. I, by the way, am also housed in the New York City area.....both are long stories best not told here!! Automated cataloguing records were created on Inmagic on IBM PCs and these databases served admirably until the records were batch loaded into Minisis. Photo, Prints & Drawings, and Archives each had separate databases on single user system. While this helped the individual collections cope with their holdings, they did little to facilitate the sharing of cataloguing information amongst the other collections and the rest of the institution.

An integrated collections information access system had always been planned for the new CCA, and following a lengthy search process we came back to Minisis. I use the term "came back to" because when we began our hunt for the proper system, Minisis was a known quantity. We looked at some rather complex combinations of sophisticated gear and software but in the end decided upon Minisis for the following reasons:

1 - Its ability to handle variable length fields and records.
2 - Its multilingual capabilities.
3 - Its search and retrieval capabilities.
4 - Its proven track record.

Despite what any software vendor tells you, museum collections information is not terribly easy to model and store in most conventional relational databases on the marketplace today. The issues just mentioned are absolutely essential in a museum system if one does not wish to compromise quality and quantity of information that can be input.

After choosing Minisis, we worked closely with McLeod-Bishop here in Ottawa to try and grapple with the integration of all our various databases and the somewhat divergent types of information gathered by Photography,

Prints and Drawings, and Archives; the Library will be dealt with separately and discussed shortly. The structure of the system evolved into what you see on the diagram. The core of the system are the RDs CATALOG and COLLMAN. These contain about 120 fields combined (2/3 of which are in CATALOG), and are the files which store the descriptive cataloguing data and the collections management information about each object or group of objects.

The record creation methodology which we use at the CCA begins in the Department of the Registrar. A newly acquired object receives an accession number and a skeletal cataloguing record from Registration. This skeletal record is entered online via a DS called NEWINIT (new initial accessing data). NEWINIT is a join on ISN of CATALOG, COLLMAN, and a third RD, ORIGINIT. NEWINIT prompts for only about 30 of the 120 fields and is accessed via a fullscreen VPLUS series of forms. It is the ONLY database through which a record can be created. Our first system implementation did not include the RD ORIGINIT. It was added following concerns raised by the Registrar that key fields of information which they entered might be changed by a Collections cataloguer. It is vital to preserve the original accession title, country of origin, artist's attribution, and any source, cost or insurance information which was known at accessioning time. This data might be called upon for tax, insurance, or customs use or verification and must not be modified or deleted. Thus, this third RD, ORIGINIT, was created as sort of a "dead storage" file to preserve the record as it was originally entered. Fields defined in ORIGINIT are mirrors of those in CATALOG and COLLMAN, so fields are actually written twice from the DS NEWINIT.

The same series of VPLUS forms are used for the DS UPDINIT (update of initial accessioning data, and also spelled wrong on your diagram), but are accessed from FSMODIFY rather than FSENTRY. This DS allows the collections cataloguer to quickly view, modify and append the 30 or so initial accessioning fields, and change the record status flag to allow the record to be accessed by the public. NEWINIT and UPDINIT are the only two applications which make use of fullscreen VPLUS forms.

Each individual object collection has a corresponding PS and DS built for it to allow for the addition of descriptive cataloguing and collections management information. The PS is a subset of those descriptive cataloguing fields which pertain only to that specific collection, and the DS is a join of those projected fields with all fields in the RD COLLMAN. Remember that these PSs and DSs are used in Modify rather than Entry because the collections staff are working with records which have already been created by registration.

The six KSAM files shown validate personal and/or corporate name, subject headings, geographic terms (ANY file structure), building proper names, record status, and record type. The CCA is presently wrestling with the creation and structure of inhouse descriptive cataloguing rules which will be observed by all collections. This process is much more tedious than the structure and creation of the physical databases, but has made great headway in the past few months. These rules will govern what information should be input in each field and the syntactical structure of that information. This will allow staff and the general public to make more precise queries across all collections and feel confident of the search results. We are also evaluating the structure of our authority/validation files and what roles these files should play in the maintenance of authority and syntax control within the database structure. We are studying IDRC's Guideline for the Building of Authority Files in Development-Information Systems to determine whether we should implement that type of structure for our name and geographic authority files.

The RD NAMES, sitting down there all by itself, is a biographical database for all personal and corporate names. In it we input the preferred and variant names for artists, architects, firms, etc., along with other information about birth and death dates, nationality, locus of activity, and active dates. The preferred form of name should be entered in the NAMES database first, as it too is linked to the KSAM file KNAM. Thus when cataloguing record is being created or updated the proper form of the artist's name will already exist in the KSAM authority file. This

procedure, though, will be difficult to enforce without some type of physical linking of the NAMES RD to the rest of the cataloguing record. A restructuring of our authority files will undoubtedly involve a reworking of the NAMES database.

CCA is planning on mounting a thesaurus in Minisis known as the Art and Architecture Thesaurus (AAA for short). The AAT is a project of the Getty Trusts Art History Information Program and is comprised of 38,000 terms in 36 hierarchies representing 7 facets ranging from abstract concepts to physical descriptors.

CCA will use the terms for topical, genre/form, and physical characteristics access within our records. Discussions between the CCA and the AAT will commence in November and will center on which hierarchies will be mounted, and the physical properties of these files so they will be loadable into a Minisis thesaurus structure. The AAT was built using a Britton-Lee IDM (Intelligent Database Machine), but it is also being output in the MARC Authorities Format.

The mention of MARC leads into the discussion of the CCA Library. At present the Library uses RLIN (Research Libraries Information Network) headquarters at Stanford, for all its online transactions. All acquisitions, cataloguing, and holdings data is input in RLIN, and no local library system is being used. The records are all in the various USMARC formats and are accessed via leased communications lines between Montreal and California. While RLIN works well, it cannot be used by other collections staff nor the general public because of the prohibitive cost/access ramifications and also its total lack of a "user-friendly" interface. A local library system will allow the CCA to have much broader access to its own records than is available in RLIN. The Library is a rare book library and access to holdings using physical descriptors such as watermark, etc. as opposed to traditional subject descriptors is essential. CCA also must have a bilingual OPAC (Online Public Access Catalog). RLIN was not designed for, not is it intended to be used as an OPAC.

CCA thus has decided to use Minisis for the implementation of a local library system. At present, the system is still in its infancy in physical design but we have a fairly clear conceptual picture of how we are going to proceed. The CCA Library wishes to remain a member of RLIN and thus will still do acquisitions and cataloguing on RLIN. RLIN will not accept records from CCA that have been catalogued on a local system so we will get MARC tapes from RLIN which contain our records dumped from their Minisis database. After seeing IDS's use of the MARC exists in their Minisis database in Mexico City last year, I was convinced that the CCA could create a MARC based system and load the RLIN tapes. Murray Waddington, Associate Librarian at the CCA, and I travelled to IDS in June and spent three days working with Alan Hopkinson and his staff, dissecting their use of the Minisis MARC exits and their overall library system methodology. We are extremely grateful to Alan and IDS for all the hospitality extended to us, and for answering all the questions we posed to them.

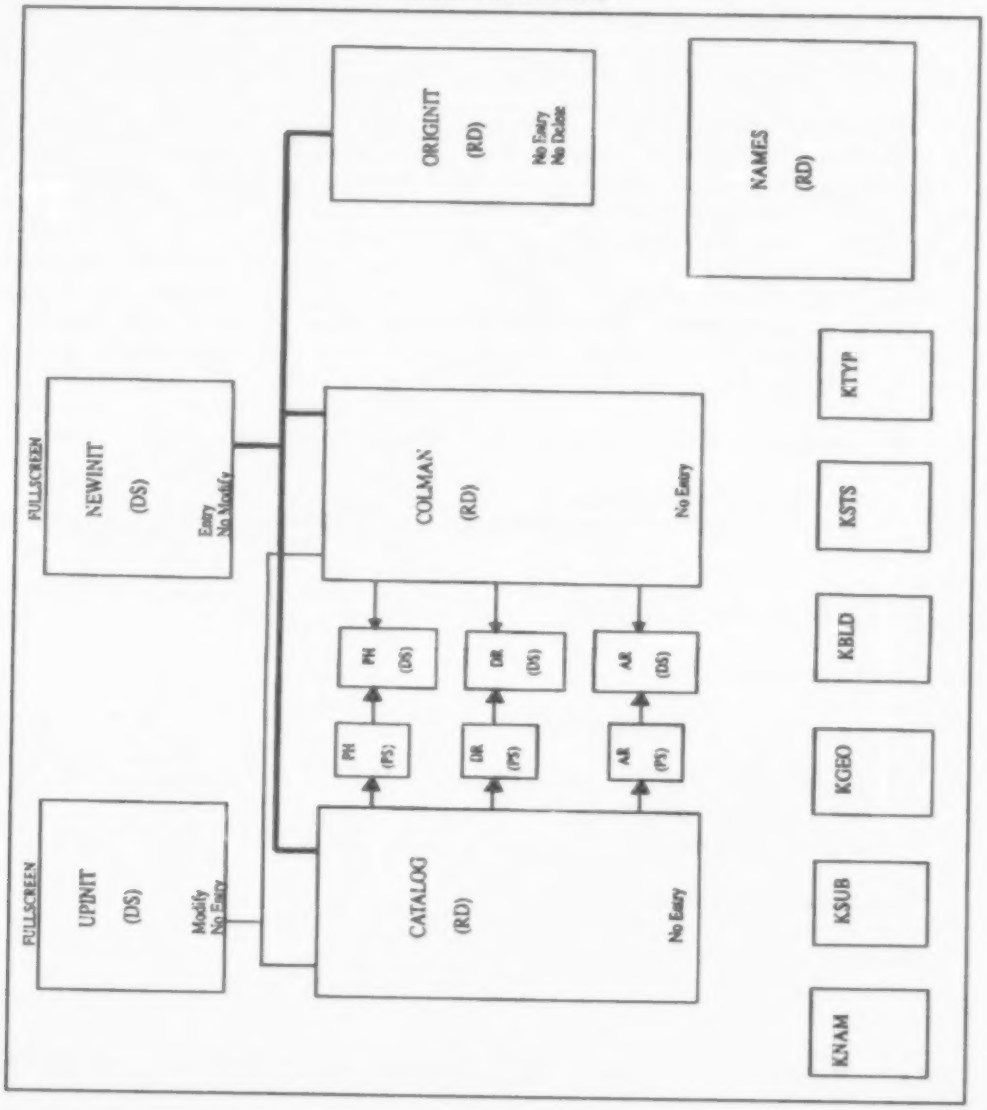
We returned to Montreal, set up a workgroup, and have been hammering away as it ever since. We intend to map as much of the MARC exit databases. The actual number of fields and imbedded subfields is some huge stupefying figure of which we are not sure of at this moment. We have run up against some physical and conceptual problems; many of which we hope to solve this week while here in Ottawa; but I still feel the project is quite doable. I am sure I will be standing here during next year's MUG meeting detailing our successes and failures.

Other Collections oriented Minisis projects are in the planning stages at present. These include databases for incoming and outgoing consignments, object loans from the collections, and a very detailed condition report/conservation treatment structure. CCA has also moved its rather complicated mailing list system to Minisis recently and that is functioning quite well. We are also considering the software in a records management/document

tracking type project to help the institution deal with its massive amount of paperwork. All in all, Minisis is helping to integrate workflow and operations at the CCA, and I see much potential for its use in the future.

If there are any questions on this discussion, the CCA itself, or anything else which may arise, please do not hesitate to ask me or my colleagues now or during the week. Thank you.

CCA DATABASE STRUCTURE



INTRODUCCION

La Universidad Pontificia Bolivariana con sede en Medellín, Colombia, es una Institución de formación permanente para la educación superior, que desarrolla sus objetivos educativos en las modalidades de educación formal, contando para ello con la educación básica primaria y básica secundaria con 5.000 estudiantes, pregrado con unas 14 facultades en 7 sectores de conocimiento:

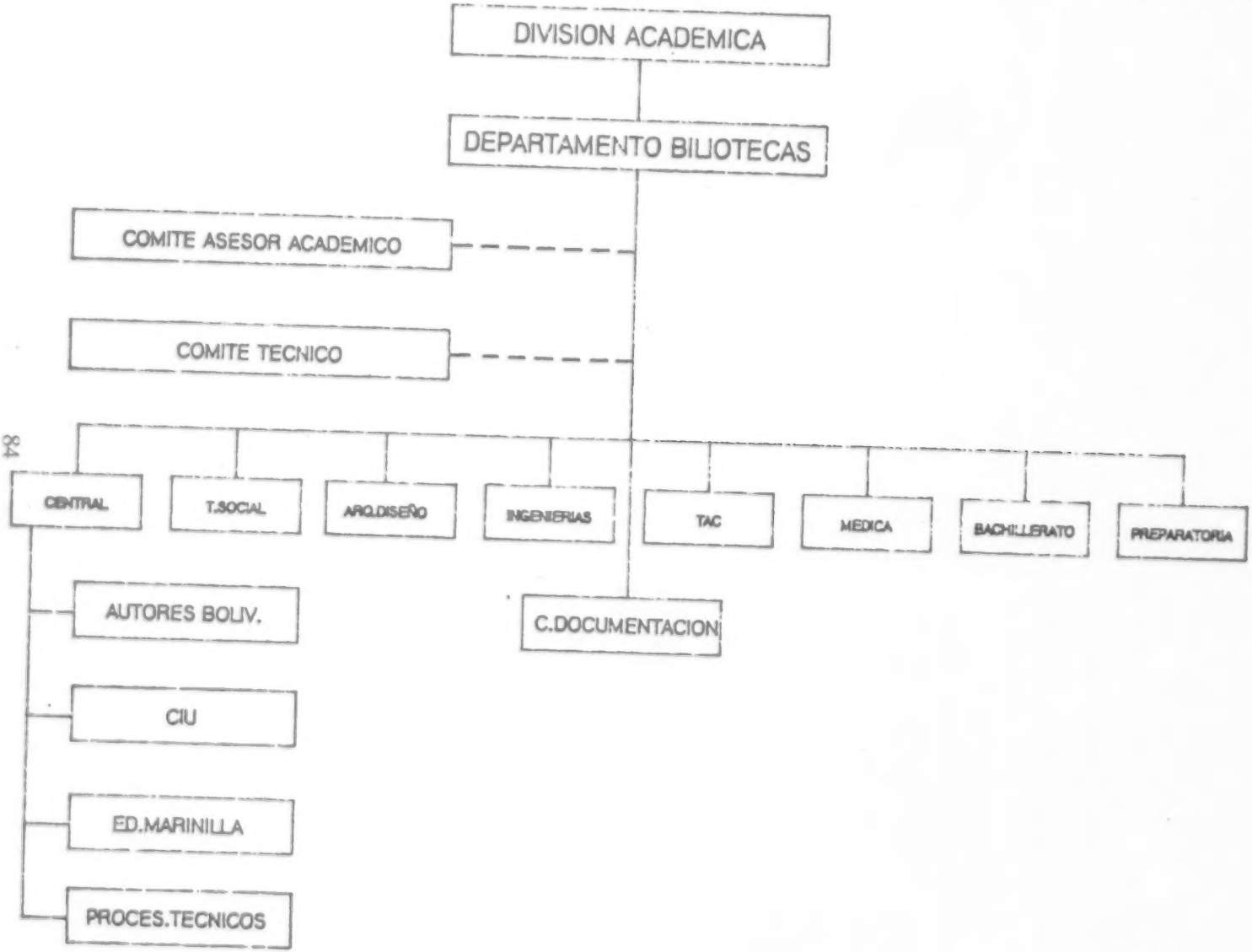
- Arquitectura y Diseño
- Ingenierías
- Educación y Humanidades
- Derecho y Ciencias Políticas
- Ciencias Eclesiásticas
- Ciencias Sociales
- Ciencias Biológicas

Como apoyo a los programas académicos, docentes, investigativos y culturales de la Universidad, cuenta con el Departamento de Bibliotecas conformado por 7 bibliotecas

universitarias en las áreas de Arquitectura y Diseño, Ingenierías, Comunicación Social, Teología, Administración, Eclesiástica de Filosofía, Medicina, Derecho y Ciencias Políticas, Educación y Trabajo Social; un Centro de Documentación especializado en Contaminación ambiental, Tecnología apropiada en los temas de Energía Solar, Eólica y Biomasa, y otras áreas tales como conservación de energía cuero y población y las bibliotecas escolares del Bachillerato y la Preparatoria.

Anexo 1. Organigrama del Departamento de Bibliotecas.

ORGANIGRAMA DEPARTAMENTO DE BIBLIOTECAS U.P.B.



ANEXO 1

COLECCIONES

El Departamento de Bibliotecas cuenta con una colección de 88.557 libros, 3.031 títulos de publicaciones periódicas y 47.401 audiovisuales

BIBLIOTECAS	AUDIOVI-SUALES	LIBROS	TITULOS DE REVISTAS
CENTRAL	490	30.000	1.080
ARQUITECTURA Y DISEÑO	31.759	6.094	121
TAC	9.458	11.037	316
TRABAJO SOCIAL	1.933	8.345	142
INGENIERIAS	2.362	12.887	554
MEDICINA	0	3.476	402
CENTRO DE DOCUMENTACION	0	2.500	350
BACHILLERATO	1.054	7.422	60
PREPARATORIA	345	6.046	3
EDUCACION MARINILLA	0	750	3
TOTAL	47.401	88.557	3.031

SERVICIOS

Este Departamento ofrece a la Comunidad Universitaria los siguientes servicios:

1. Préstamo
2. Préstamo Interbibliotecario
3. Referencia
4. Elaboración de Bibliografías
5. Diseminación Selectiva de la Información y Servicio de Alerta
6. Servicio de colecciones especiales · Centro de Información sobre Universidades, Colección sobre el Libertador Simón Bolívar, y colecciones especializadas en audiovisuales.
7. Servicios Culturales en los que se exponen diferentes manifestaciones artísticas de renombre local y nacional
8. Participación en las diferentes Ferias del Libro ya que la Universidad tiene una producción editorial bastante amplia como · Títulos de revistas, libros, documentos, boletines bibliográficos y de Facultades, Informes de los Congresos y demás publicaciones emitidas por el personal docente de la Universidad.

ACTIVIDADES

El Instituto Colombiano para el Fomento de la Educación Superior, ICFES, organismo gubernamental que a nivel nacional se encarga del desarrollo, evaluación y control de las entidades de Educación Superior, Media y Tecnológica, ha desarrollado varios programas en los cuales el Departamento de Bibliotecas de la U.P.B. participa activamente.

Dicho instituto a través de su División de Información y Documentación (SIDES) ha desarrollado el Sistema Colombiano de Información Bibliográfica (SCIB) el cual es compatible con Minisis, software que desde hace 1 año se ha implantado para manejo de información y servicios en las bibliotecas y en el proyecto de creación de la Base de Datos de Jurisprudencia Colombiana de la Facultad de Derecho de la Universidad Pontificia Bolivariana.

JUSTIFICACION

La Universidad Pontificia Bolivariana luego de analizar distintos software para manejo de información bibliográfica general y especializada optó por el sistema Minisis por las siguientes razones.

1 Por el nuevo equipo adquirido por la Universidad y su mayor capacidad de almacenamiento

2 Por el ofrecimiento que del Minisis hace el IDRC, lo que significa para la Universidad la adquisición de un software adecuado a las necesidades de la institución, y por el apoyo para la capacitación del personal encargado del manejo y mantenimiento de sus aplicaciones

3 Por el soporte que a nivel técnico y personal suministra el IDRC a través de sus oficinas locales

4 La facilidad que éste software nos ofrece para diseñar las bases de datos, la agilidad y rapidez en la captura y consulta de información, ventajas que otros software no tienen

5 Al utilizar el minisis, la universidad se ha convertido en pionera a nivel departamental, cumpliendo una labor de difusión de los programas del IDRC

APLICACIONES DEL MINISIS EN LA U.P.B.

1. SISTEMATIZACION EN EL DEPARTAMENTO DE BIBLIOTECAS

En el año de trabajo con la aplicación del Minisis en las distintas bibliotecas de la U.P.B., la labor del equipo interdisciplinario, impulsadores del proyecto se ha centrado en hacer los ajustes necesarios para el correcto funcionamiento de la base de datos.

Entre las realizaciones del equipo interdisciplinario merece resaltar:

1. Revisión y ajustes requeridos en la base de datos.
2. Diseño, elaboración y ajustes del formato para la captura de datos.
3. Capacitación del personal encargado de la grabación de los registros y del diligenciamiento del formato y elaboración de su respectivo manual.
4. Elaboración del manual de diligenciamiento del del formato. (Ver anexo 2)
5. Elaboración de los formatos de impresión para los diferentes subproductos que se desean obtener de la base de datos.

6. A raíz de la participación de la Universidad en la reunión de usuarios en México, se recibió a título de donación el Macrotesauro en tres idiomas Inglés, Español y Francés, el cual ha sido implementado y que se constituye en un instrumento valioso para la consulta. Hacia el futuro se pretende desarrollar tesaurus propios con lenguaje natural y controlado que se utilizan en las diferentes bibliotecas especializadas de la Universidad.

7. El desarrollo y aplicación del Minisis en el Departamento de Bibliotecas, y en el proyecto de Jurisprudencia de la Facultad de Derecho, hizo necesario la adquisición de nuevos equipos, los los cuales se ubicaron en tres zonas geográficas diferentes en las que se encuentran las distintas Facultades de la Universidad. Esto ha tenido las siguientes repercuciones:

- Incremento en la grabación de los registros bibliográficos
- Mayor cobertura de los servicios al usuario
- Agilidad en el intercambio de información

- Prestigio y credibilidad que a nivel departamental ha adquirido la Institución con la aplicación de este software. Ver Diseño de la Base de Datos BTECAUPB. (Anexo 3).

8. El interés que han puesto las Directivas de la Universidad, el Departamento de Sistemas y el personal de cada una de las unidades de información, ha dado lugar a una mejor intercomunicación y rapidez en la búsqueda de información, a pesar de los servicios descentralizados y las distancias geográficas en las que están ubicadas las sedes de la Universidad (Ver anexo 4)

9. Además de la aplicación del Minisis en Bibliotecas, en marzo del año en curso se recibió la Base de Datos de Energia del Energy Research Group (ERG) con el fin de implementarla en el Centro de Documentación especializado en esta area. A la fecha se han desarrollado los siguientes pasos:

- Se procedió al montaje de la Base en el equipo del Centro de Documentación. (NEC APCIV)
- Revisión general de la Base de Datos

- Obtención de un listado general el cual se dió a conocer a los investigadores del CIDI (Centro Integral de Investigaciones).
- Dicha Base se tiene como fuente de referencia e investigación y complemento de la actual Base de Datos.

2. SISTEMATIZACION EN EL PROYECTO DE INFORMATICA JURIDICA

ANTECEDENTES

Surge en 1984 con la finalidad especifica de construir un Banco de Datos de Jurisprudencia de la Corte Suprema de Justicia en las áreas Civil, Penal y Laboral. Abarca el período desde 1920 hasta la fecha.

La fuente documental de la Base está constituida por la Gaceta Judicial (publicación oficial de la Jurisprudencia) que se encuentra ubicada en la colección de la Hemeroteca de la Biblioteca Central.

Actualmente se cuenta con un grupo de trabajo constituido básicamente por 40 estudiantes y egresados de la Facultad que son dirigidos por Profesores del Departamento de Investigaciones adscrito a la Facultad de Derecho.

REALIZACIONES

En el desarrollo de éste proyecto se han cumplido las siguientes etapas :

1. Diseño de la base de datos y puesta a prueba mediante una muestra de Jurisprudencia. (Ver anexo 5)

2. Diseño de los formato de captura. (Ver anexo 6)

3. Elaboración de los Manuales:

   - Analítico que incluye el procedimiento a seguir para realizar el análisis documental de la Jurisprudencia. (Ver anexo 7)
   - Manual de diligenciamiento de formatos que incluye amplia explicación sobre los campos del formato. (Ver anexo 8)
   - Manual para el diligenciamiento de Ficha Jurisprudencial. (Ver anexo 9)

4. Realización de un curso de inducción semestral para capacitar a los auxiliares de investigación encargados de diligenciar los formatos. A la fecha se han capacitado en 3 cursos a 60 personas.

5. La Presidencia de la República convocó en el mes de Mayo a un seminario de evaluación del Proyecto del Sistema Nacional de Informática Jurídica Documental y allí la U.P.B. propuso la unificación de criterios metodológicos y técnicos y el análisis de un software diferente al elaborado por el Icfes (SCIB), Sistema Colombiano de Información Bibliográfica, proponiendo como alternativa la aplicación del Minisis en el mencionado proyecto.

6. Actualmente se está desarrollando un programa en colaboración con el Departamento de Bibliotecas para extender la base al campo de la Doctrina Jurídica en el Area Civil, en el mismo se cuenta con la participación de Monitores del Centro de Investigaciones de la Facultad de Derecho.

Además de estos trabajos en el área de Informática Jurídica Documental, desarrollados gracias al apoyo del Departamento de Sistemas de la Universidad se ha extendido el campo de acción a la informática jurídica de gestión, a través de la sistematización del

Consultorio Jurídico de la Universidad y el apoyo a la labor de los jueces mediante la automatización de juzgados aunque estos programas han sido desarrollados con software diferente a Minisis se piensa que la experiencia adquirida permitirá en un futuro hacer aplicaciones de este tipo con Minisis.

Es preciso señalar que la Base de Datos de Jurisprudencia desarrollada en Minisis se ha basado en la experiencia de la aplicación en el Departamento de Bibliotecas, lo que ha permitido evitar errores en el diseño y ha agilizado la aplicación de este software.

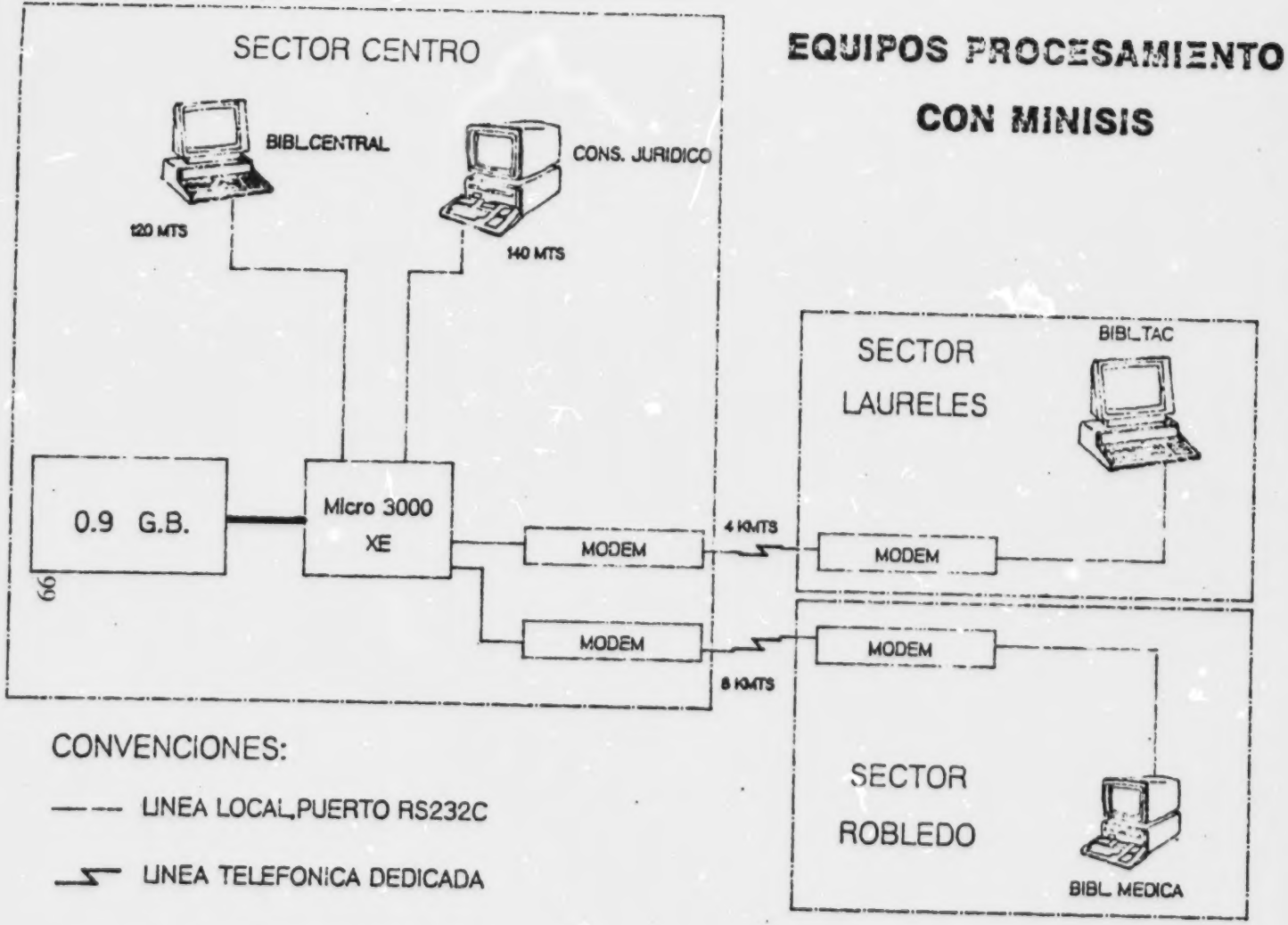
CONCLUSIONES

Para terminar, cabe resaltar que la aplicación del Minisis en la Universidad ha permitido apreciar las bondades y ventajas que este software ha traido en beneficio del usuario de la información.

Pretendemos para un futuro cercano extender el servicio de consulta en línea, no solo al investigador y profesor sino al usuario en general debido a que en la actualidad el mayor tiempo se dedica a la alimentación de la base de datos.

En nombre de la Universidad agradezco el gran apoyo que nos ha brindado el Centro Internacional de Investigaciones para el Desarrollo (IDRC), apoyando nuestra participación en este evento que consideramos de gran importancia para la Institución que represento, además de la permanente capacitación, asesoría y actualización mediante el envío de los diferentes productos y versiones referentes al software.

EQUIPOS PROCESAMIENTO CON MINISIS



ANEXO 4

MINISIS EN LA BIBLIOTECA CENTRAL DE LA UNIVERSIDAD TECNICA FEDERICO SANTA MARIA - VALPARAISO/CHILE

POR

OSCAR CAMPOS F.
DIRECTOR
BIBLIOTECA CENTRAL U.T.F.S.M.
VALPARAISO - CHILE

1. Introducción

Fundada en el año 1931, la Universidad Técnica Federico Santa María, es una de las instituciones de Educación Superior más antiguas de Chile.

La estructura académica de la Universidad comprende tres Facultades que son: Facultad de Ingeniería, Facultad de Ciencia y Facultad de Economía y Administración, las cuales concentran sus actividades en las áreas del conocimiento que les corresponden mediante la docencia, la investigación y la extensión universitarias.

Además de la Casa Central (ubicada en la ciudad de Valparaíso), donde se imparten las carreras de Ingeniería y Ciencia, la Universidad cuenta con Sedes en las ciudades de Viña del Mar y Talcahuano, ambas orientadas a la preparación de Técnicos Universitarios.

De acuerdo a lo anterior, la Universidad otorga los títulos de Ingeniero Civil (con mención en Electricidad, Electrónica, Química, Mecánica, Informática y Obras Civiles), además de Licenciaturas en Ciencia (mención Matemática, Física y Química), y los grados académicos de Magister y Doctor. En los laboratorios de cada Facultad se realiza también una importante labor de investigación científico-tecnológica.

//.

2. Los Servicios Bibliotecarios

El sistema bibliotecario de la Universidad Santa María está formado por una Biblioteca Central y dos Bibliotecas Departamentales, correspondientes a las Sedes de Viña del Mar y Talcahuano respectivamente.

Creada en el año 1931 la Biblioteca posee una superficie total de 2.800 mts.2, y su colección es especializada en el área técnico-científica; está compuesta por 95.000 monografías, 2100 títulos de publicaciones periódicas y se cuenta además con una gran cantidad de material audiovisual.

Para los fines de procesamiento técnico, la Biblioteca utiliza el Sistema de Clasificación Decimal Dewey 19 edic., las Reglas de Catalogación Anglo Americanas 2da. edición, y, las listas de Encabezamientos de Materia de la Unión Panamericana.

Por otra parte, mantiene una participación muy activa en el contexto nacional e internacional, con estrechos contactos de intercambio de informacion con instituciones similares. Integra en calidad de centro cooperante varias redes de información bibliográfica, destacando entre ellas: la Red Panamericana de Información e Ingeniería Sanitaria y Ciencias del Ambiente (REPIDISCA), la Red del Sistema de Información Siderúrgica de América Latina (SISAL), la Red de Información en Telecomunicaicones y Ciencias Afines (RINTELCA) y, la Red Nacional de Información Bibliográfica (RENIB).

Para el desarrollo de su labor, la Biblioteca Central cuenta con los siguientes recursos humanos:

- 9 Bibliotecarios
- 10 Ayudantes de Biblioteca
- 7 Auxiliares
- 1 Secretaria

a través de los cuales se da atención a una población total de 4.200 usuarios.

3. Automatizaciõn de Biblioteca Central

En Febrero de 1985 la Universidad adquiere un computador HP-3000/37-XE, con 132 mgb, de memoria secundaria, para satisfacer los requerimientos de la administraciõn operativa, administraciõn docente y parte de las necesidades de Biblioteca Central.

En Julio de 1985, el Sr. Nicolãs Cop - IDRC, visita la Universidad con el objeto de instalar el software MINISIS y dictar curso de capacitaciõn sobre su manejo y aplicaciones. En el curso participan funcionarios de Biblioteca y del Departamento de Procesamiento de Datos (Bibliotecarios, Analistas y Programadores).

En el mes de Noviembre de 1985, y con posterioridad a la participaciõn del Director de Biblioteca en la reuniõn de usuarios MINISIS realizada en Washington D.C. (U.S.A.) se presenta ante las autoridades de la Universidad un Proyecto de automatizaciõn integral de los Servicios Bibliotecarios. Lamentablemente, restricciones de tipo presupuestario impedieron la adquisiciõn del hardware adicional que este proyecto requerïa., razõn por la cual se decidiõ limitar su alcance a un Proyecto Piloto.

3.2 Proyecto Piloto de Automatizaciõn de Biblioteca Central

3.2.1 Objetivo General

Ampliar la cobertura y mejorar el acceso a la informaciõn existente en el acervo de la Biblioteca Central U.T.F.S.M., mediante el uso del software MINISIS para la captura procesamiento y recuperaciõn de la informaciõn, y, creaciõn de una Base de Datos Bibliogrãfica de los Trabajos de Titulaciõn, Tesis de Grado y memorias de los alumnos egresados de la Universidad Santa Marïa.

//.

3.2.2 Objetivos Específicos

3.2.2.1 Utilización del Sistema MINISIS como software de apoyo a la gestión bibliotecaria.

3.2.2.2 Creación y mantención de una Base de Datos de las Tesis de Grado U.T.F.S.M., automatizada y actualizada, a través de la incorporación, modificación y eliminación de registros.

3.2.2.3 Utilización de la Base de Datos para las siguientes funciones:

* Adquisición/recepción del material
* Catalogación en línea
* Recuperación de la información por distintas claves (autor, título, descriptores, facultad, carrera, año, etc.) y, por distintos tipos de salidas.
* Control de vocabulario de indización.
* Intercambio de registros con formato MARC.

3.2.3 Situación a la fecha

Este Proyecto Piloto se inició oficialmente en el mes de Marzo de 1986, definiéndose la estructura para la Base de Datos, la cual consta de un archivo master y tres visiones parciales (PS) para su uso en Adquisiciones, Catalogación y Búsquedas (ver anexo Nº 1).

Cada una de los PS cuenta con su formato de impresión ad-hoc, y como sub-producto de esta Base se han editado dos publicaciones correspondientes a las Tesis de los alumnos egresados en el período 1980-1983 y 1982-1986, para lo cual se generaron los índices de autor y descriptores correspondientes.

Al mes de Agosto de 1988 la Base de Datos contiene cerca de 7.000 registros, y como método de trabajo se utiliza una hoja de entrada de datos, en la cual se realiza la catalogación de cada obra.

Nuestra experiencia con MINISIS ha sido altamente satisfactoria, habiendo evaluado sus enormes potencialidades. Hemos trabajado en el ingreso de información en línea, asi como también en forma Batch, obteniendo en ambos casos excelentes resultados.

Salvo algunos pequeños inconvenientes con el procesador Imprimir y con la interfase MARC, producto principalmente de nuestra falta de experiencia, quizás si nuestro mayor problema radica en el no disponer de documentación en español (manuales del sistema) y de un mayor hardware que nos permita mantener una aplicación de mayor envergadura y tiempo de acceso a la Base.

3.3 Otras Aplicaciones MINISIS

3.3.1 Base de Datos REPIDISCA

La Biblioteca Central U.T.F.S.M. forma parte de la Red Panamericana de Información en Ingeniería Sanitaria y Ciencias del Ambiente (REPIDISCA) en carácter de centro cooperante.

En Octubre de 1986, se establece un convenio con el Centro Panamericano de Ingeniería Sanitaria - CEPIS, nodo central de esta Red y ubicado en la ciudad de Lima-Perú, a través del cual nos remiten regularmente una cinta con la Base de Datos REPIDISCA, debidamente actualizada. Esta Base de Datos contiene más de 25.000 registros correspondientes a informes técnicos y proyectos de investigación en el área de ingeniería sanitaria y ciencias del ambiente.

Una vez analizada la estructura de esta Base de Datos, se hicieron los arreglos pertinentes para su utilización en la U.T.F.S.M., lo cual nos ha permitido prestar servicio de búsquedas y diseminación selectiva de información a toda la comunidad universitaria de la ciudad de Valparaíso.

Es importante señalar que esta aplicación demuestra el efecto multiplicador del apoyo que presta el IDRC a los países en desarrollo, ya que la REPIDISCA se inicio con un importante aporte y respaldo del IDRC.

3.3.2 Base de Datos - Efemérides

En Marzo de 1987 se inicia una nueva aplicación en el marco de un proyecto de la Universidad titulado: "Recuperación del Patrimonio Histórico - Cultural de la U.T.F.S.M.".

Se creo por medio de MINISIS una Base de Datos con la información de las efemérides de la Universidad (datos cronológicos de los hechos más relevantes ocurridos en la Institución desde su creación y hasta la fecha).

Esta Base contiene 1.200 registros, y su estructura es muy simple (ver anexo 2), estando en preparación una edición parcial - clasificada de la misma. Se actualiza en forma mensual.

3.3.3 Base de Datos - Contraloría

Esta Base de Datos creada en Agosto de 1987, contiene información relativa a todos los decretos, reglamentos y acuerdos tomados por el Consejo de Administración Superior de la Universidad, así como también de las normativas legales emanadas por el Ministerio de Educación Pública y que afecten directa o indirectamente la administración docente de la Universidad.

A esta fecha se han ingresado 2.300 registros correspondientes a Decretos de Rectoría y Acuerdos de los Consejos de las Vicerrectorías Académica y de Asuntos Económicos y Administrativos.

En estos momentos se trabaja en el desarrollo de un vocabulario controlado que permita una rapida y eficaz recuperación de la información contenida en la Base.

La estructura de esta Base se muestra en el anexo Nº 3.

3.4 Perspectivas Futuras - Proyectos en Estudio

3.4.1 En estos momentos, a través de la Secretaría Ejecutiva de la Vicerrectoría Académica se evalúa la posibilidad de aplicar MINISIS al proceso de control curricular docente de los alumnos de la Universidad. Esto implica llevar un registro actualizado para cada alumno, con los antecedentes de la carrera que estudia, año que cursa, ramos aprobados/reprobados, notas, curva de rendimiento, etc.

La decisión de esta materia comprende además la eventual adquisición de un equipo adicional (Hewlett Packard 3000/48).

3.4.2 Finalmente, una vez que Biblioteca Central cuente con el hardware necesario que le permita su automatización integral vía MINISIS, se tiene contemplado efectuar un enlace directo con el nodo central de la Red Nacional de Información Bibliográfica (RENIB), que opera con un computador IBM 9341 y con el sistema NOTIS (Northwestern Online Total Integrated System).

Esta conexión nos posibilitará intercambiar registros en formato MARC, conforme a acuerdos de catalogación cooperativa próximos a suscribirse.

4. CONCLUSIONES

En nuestros tres años de experiencia en el uso de MINISIS, hemos podido comprobar sus enormes potencialidades para su uso en Bibliotecas. Es, sin lugar a dudas, una excelente alternativa para las Unidades de Información de países en vías de desarrollo, más aún cuando se tiene la posibilidad de hacer múltiples aplicaciones y se cuenta con el valioso y permanente respaldo del excelente equipo de profesionales que conforman la División Ciencias de Información de IDRC.

Valparaíso (Chile) Septiembre 1988

MINISIS EN LA AUTOMATIZACION DEL CATALOGO COLECTIVO DE PUBLICACIONES SERIADAS

Introduccion:

El Consejo Nacional de Ciencia y Tecnología (CONACYT), con sede México D.F., es un organismo público descentralizado, el cual tiene como principal objetivo, el difundir y apoyar las actividades de desarrollo e investigación científicas y tecnológicas en México.

El Catálogo Colectivo de Publicaciones Seriadas es el resultado de un esfuerzo realizado por el CONACYT y la comunidad bibliotecaria de México, orientado a la integración, acceso e intercambio del acervo existente en centros de documentación de la República Mexicana. Este sistema, permite la optimización de recursos y garantiza que los usuarios de los centros de información, tengan acceso a una gran cantidad de documentos, por medio de las facilidades que ofrece la consulta de este sistema.

Antecedentes:

La versión actual del Catálogo Colectivo, es una idea tomada de antiguos trabajos. en México el primer esfuerzo por integrar un acervo bibliotecario, fue el Catálogo Colectivo de Publicaciones Periódicas Existentes en la Ciudad de México. Sección de Medicina y Ciencias Biológicas publicado en el año de 1949, compilado en 1943 por la Dra. Maria Teresa Chavez Campomanes. Rudolph H.

Gjelness y Helen Ranson, que incluyó los acervos de 18 bibliotecas especializadas en Medicina y Ciencias Biológicas de México.

En el año de 1968 se crea el Catálogo Colectivo de Publicaciones Periódicas en Bibliotecas de la República Mexicana, realizado por el M en C. Pablo Velásquez siendo el primero a nivel Nacional, el cual incluye 13,035 títulos de 134 bibliotecas.

Con la creación del Consejo Nacional de Ciencia y Tecnología, este proyecto cobra nueva vida, ya que su autor, cede al CONACYT los derechos sobre el cátalogo. En 1973 aparece el Suplemento a la Primera Edicion del CCPP, el cual incluye 8,803 títulos de 132 bibliotecas. Esta trabajo, fue el primero en su tipo que empleo medios automatizados para su elaboración.

En el año de 1976 el CONACYT publicó el Cátalogo Colectivo en su Segunda Edición y en el se integrarón 32,358 títulos de 158 bibliotecas.

En 1983 es retomado el proyecto del CCPP, y se convoca a toda la comunidad bibliotecaria de Mexico, a participar en la eleboración de la tercera edición del Cátalogo. Se plantea entonces la creación de un sistema computarizado, permanente actualizable, el cual se basaría en las normas del ISDS/ISO2709.

La primera etapa de automatización del actual Catálogo Colectivo se realizó en un equipo Burroughs-5900, instalado en el CONACYT y se utilizando el software DBMS, sistema manejador de bases de datos de la misma firma. Desde esta etapa, se adoptaron las normas de catalogación del ISDS para el diseño del sistema. En ésta fase se elaborarón programas en lenguaje COBOL y ALGOL, para el manejo y operación de las bases de datos que desde entonces forman el cuerpo principal del CCPS: TITULOS, ACERVOS y EDITORIALES.

Para el proceso de captación de datos se contrataron los servicios de una compañia privada, realizandose después la revisión y corrección de los mismos en el CONACYT. Los datos referentes a bibliotecas por ser relativamente pocos se capturaron en un microcomputadora usando el sistema MICROISIS.

Debido a que en el equipo B5900 de CONACYT se ejecutan también varios procesos administrativos, pronto surgieron, algunas dificultades. Por ejemplo, el tiempo de respuesta, el espacio en disco (DBMS sólo maneja campos de longitud fija) etc. Para resolver parcialmente estos contratiempos, se establecieron convenios de colaboración con el Instituto de Investigaciones Bibliográficas de la UNAM, para que la validacion y corrección de los datos se efectuara en sus instalaciones, empleando un equipo HP3000 y el manejador de bases de datos MINISIS.

MINISIS y el CCPS.

Una vez definida la estructura del CCPS en MINISIS, la información se trasladó de un sistema a otro, gracias a las facilidades que ofrece el procesador de BACHIN, y el ISOCONV de MINISIS. Con el propósito de soportar las normas del ISDS en MINISIS, fue necesario hacer uso de la interfase UNIMARC.

Como se mencionó anteriormente, MINISIS fue utilizado inicialmente para la validación y corrección de datos, ya que la información, una vez depurada, se adecuaba por medio del procesador IMPRIMIR a las especificaciones del sistema de CCPS en el equipo B5900 de CONACYT.

Al darse cuenta de las ventajas inegables que ofrece el sistema MINISIS para el manejo del CCPS, A finales de Octubre de 1987, la Dirección de Servicios Informáticos del CONACYT adquiere un equipo HP3000, realizandose inmediatamente las gestiones necesarias ante el IDRC, para obtener la licencia de uso de MINISIS. La instalación del sistema se hizo coincidiendo con la reunión de usuarios MUG-87 en México.

Actualmente el CCPS reside actualmente en el equipo HP3000 de CONACYT, operando por medio del sistema MINISIS.

ESTADO DE LAS BASES DE DATOS DEL CCPS

B.D.	CONTENIDO	# REG.	IMPLICITO BUSQUEDA	FORMATO	DATOS
REGADQ	TITULOS	33155	TITCLA	IMPLICITO	TODOS
ENTADQ	EDITORIALES	15814	#EDIT	IMPLICITO	TODOS
ACERVO	ACERVOS/BIBLIOT.	324921 (34,502)	#TITULO	IMPLICITO	TODOS
BIBLIO	BIBLIOTECAS	355	#BIBLIO	IMPLICITO	TODOS
TEMA	TEMAS DEWEY	928	DEWEY	PRTEMA	TODOS
JTET	TIT+EDIT+TEMA	=REGADQ	TITCLA	PRCCPS	CATALOGO TIT.
PPACRV	TIT+EDIT+ACERVO +BIBLIOTECA	=REGADQ	TITCLA	PRUNION	CATAL.COLECT. (PANTALLA)
PPACRV	TIT+EDIT+ACERVO +BIBLIOTECA	=REGADQ	TITCLA	CC	CATAL.COLECT. (MICROFICHA)

Productos del CCPS:

- Banco de Información CCPS en MINISIS, disponible a travéz del Servicio de Consulta a Bancos de Información (SECOBI) de CONACYT. Cabe aclarar que el CCPS reside en un equipo HP3000 el cual se encontra conectado a la red Nacional de Teleproceso y Transmisión de Datos (TELEPAC), por lo que el CCPS se puede consultar prácticamente desde cualquier lugar en el que exista una linea telefónica.

- Impresión del CCPS en microfichas, conteniendo información bibliográfica registrada en base a las normas del (ISDS), el acervo de cada título en cada biblioteca y datos de las bibliotecas participantes.

- Catalogos especiales de acuerdo a las necesidades de los diferentes grupos de bibliotecas que participaron, conforme a los convenios que se celebraron para la realización del proyecto.

Como un producto especial del CCPS en diciembre de 1987 se publicó el boletín del ISDS, incluido en la revista libros de México No. 3. La informacion de este producto fue tomada del CCPS y preparada en MINISIS con las especificaciones necesarias para el sistema de fotocomposición BEDFORD.

Conclusiones:

El sistema MINISIS es sin duda, una herramienta valiosa en el desarrollo y operación del CCPS.

La estructura del sistema basada en la norma ISDS, por un lado, marca las pautas para su implantación a nivel nacional, y por el otro, la compatibilidad del CCPS mexicano con otros catálogos de latinoamérica, hace factible el intercambio de información en la región.

La posibilidad de consultar el CCPS via remota, permitirá poner a disposición del usuario final, todo un mundo de información oportuna y actualizada, permitiendo un ahorro considerable de recursos.

MAILING LIST PRESENTATION

1. Total active 36,700 records: 62% from Third World, 38% developed countries.

2. Four main data bases used:

   MAIL: Data entry and modification,

   ORGN: Organization cross-reference file.

   JMAIL: Joins MAIL & ORGN - prints expansion of six digit code for proof lists.

   LABELS: Restriction of status VALID, used for searches, lists and/or labels.

3. Purposes of IDRC mailing list:

   a. Ensure appropriate audiences receive IDRC publications.

   b. Allow IDRC to maintain contact with individuals or organizations interested in Third World development.

   c. Determine appropriate print runs for publications.

4. Organization Cross Reference file. How to verify if autonomous, describe fields - organization name, six-digit code, translation, sub-body, sub-body translation, related name. (example)

5. If designing own mailing list data base, points to remember:

   a. Coding structure.

   b. Which fields will you want fast access to (inverted online).

   c. Format you will want your records to appear in.

   d. What type of sorting sequence you will use.

   e. What sort of statistical reports will be required.

   f. Ensure style and format of each record is consistant.

6. Survey list regularily to update

7. Benefits of Version G for this application: in QUERY being able to recall entire hitfile; browsing a previous line ie. B 3; being able to list tags and mneumonics using FD; being able to sort on specified fields; and being able to print only fields you want to see. In UPDATE, while modifying a repeatable field, being able to specify the field and its occurance at once; recalling entire hitfile; the use of FD; and not having to say isn= before each record.

IDRC MAILING LIST DATA BASES

DB NAME	TYPE	DESCRIPTION	PRINT FORMATS ("t"=Terminal) ("LP=Line Printer)
MAIL	MASTER RD	Contains all of the information describing an individual or organization. Used for entry and modification.	PMAILT PMAILP PMAILTST
ORGN	MASTER RD	Organization cross-reference file. Used to verify if organization is autonomous, sub-body, or related name etc. Each autonomous organization given unique six digit code.	PORGNE
JMAIL	DS	Similar to MAIL. Joins MAIL and ORGN to print the expansion of the six digit code. Used to proof entry lists.	PJMAILT PJMAILP
LABELS	DS	Identical to JMAIL, except there is a restriction of status valid. Used for searches, lists and/or labels.	PMAIL3UP
KGEO	KSAM RD	Contains the valid form of the ISO two-letter country code, region code and full name of country in English, French and Spanish. Used to validate country codes.	PKGEO
AGEO	ANY TYPE KSAM-RD	Contains various groupings of ISO country codes taken from the KGEO data base	PAGEO
KTYP	KSAM RD	Authority file for type of organization Used to categorize i.e. research institute, United Nations system etc.	PKTYP
KACT	KSAM RD	Authority file used to identify the activity of an individual within an organization, i.e. director, department head etc.	PKACT
KMLC	KSAM RD	Authority file for subject interest coding i.e. Fisheries, information systems etc.	PKMLC
STPI	STP TYPE KSAM FILE	Contains the list of stopwords or "noise words in the address label.	PSTPI

PRÉSENTATION DE LA LISTE D'ENVOI 31/08/88/ED

1. 36 700 fichiers actifs (62 % du Tiers-Monde et 38 % des pays industrialisés).

2. Quatre principales bases de données :

   MAIL : entrée des données et modifications

   ORGN : fichier de contre-référence des organisations

   JMAIL : réunit MAIL et ORGN - imprime des extensions de codes à six chiffres pour les listes de vérification

   LABELS : restriction du statut VALID, utilisée pour des recherches, listes et(ou) étiquettes

3. Objectifs de la liste d'envoi du CRDI :

   a. Faire parvenir les publications du CRDI aux publics pertinents.

   b. Permettre au CRDI de garder le contact avec des individus ou des organisations qui s'intéressent au développement du Tiers-Monde.

   c. Fixer les volumes d'impression pour les publications.

4. Fichier de contre-référence des organisations. Comment vérifier si elles sont autonomes, décrire les champs - noms d'organisation, codes à six chiffres, traduction, organisation affiliée, traduction du nom de l'organisation affiliée, nom afférent. (exemple)

5. Pour créer sa propre base de données, garder à l'esprit les points suivants :

   a. Structure des codes.

   b. A quels champs voulez-vous avoir rapidement accès (en ligne et inversé).

   c. Format désiré pour l'affichage des dossiers.

   d. Quel type de séquence de tri voulez-vous utiliser.

   e. Quel sorte de rapports statistiques sera requis.

   f. Voir à l'uniformité du style et du format des fichiers.

6. Passer en revue la liste régulièrement pour la mettre à jour.

7. Avantages de la Version G pour cette application : en fonction RECHERCHE : possibilité de rappel et de réutilisation des fichiers de résultats; réutilisation de recherches précédentes, i.e., B 3; possibilité d'afficher la liste des champs avec la commande DZ; tri en direct; affichage des zones désirées seulement. En fonction MISAJOUR, lors de la modification d'une zone répétitive, possibilité de spécifier cette zone et son occurence d'un seul coup; rappel des fichiers de résultats à l'intérieur de la sélection des enregistrements de type RECHERCHE; la commande DZ; élimination des mots "ISN=" lors du choix d'enregistrements.

BASES DE DONNÉES DE LA LISTE D'ENVOI DU CRDI

NOM DE LA BASE	TYPE	DESCRIPTION	FORMAT D'IMPRESSION ("t" = terminal) ("LP"=imprimante)
MAIL	MAITRE RD	Contient tous les renseignements décrivant un individu ou une organisation. Utilisé pour entrée et modification.	PMAILT PMAILP PMAILTST
ORGN	MAITRE RD	Fichier de contre-référence des organisations (pour vérifier si une organisation est autonome, si elle fait partie d'une autre, le nom de l'organisation apparentée, etc.). Chaque organisation autonome reçoit un code à six chiffres unique.	PORGNE
JMAIL	DS	Semblable à MAIL. Réunit MAIL et ORGN pour imprimer l'extension du code à six chiffres. Sert à vérifier les listes d'entrée.	PJMAILT PJMAILP
LABELS	DS	Identique à JMAIL, sauf qu'il y a une restriction de statut VALID. Sert aux recherches, aux listes et(ou) aux étiquettes.	PMAIL3UP
KGEO	KSAM RD	Contient le format valide du code de pays ISO à deux lettres, du code régional et du nom complet du pays en anglais, français et espagnol. Sert à valider les codes de pays.	PKGEO
AGEO	TGR KSAM RD	Contient divers groupes de codes de pays ISO tirés de la base de données KGEO.	PAGEO
KTYP	KSAM RD	Fichier d'autorité pour le type d'organisation. Sert à catégoriser i.e. institut de recherche, système des Nations Unies, etc.	PKTYP
KACT	KSAM RD	Fichier d'autorité servant à identifier l'activité d'un individu dans une organisation, i.e., directeur, chef de département, etc.	PKACT
KMLC	KSAM RD	Fichier d'autorité pour le code d'intérêt, i.e., pêches, systèmes d'information, etc.	PKMLC
STPI	STP TYPE KSAM	Contient la liste de mots vides pour l'étiquette d'adresse	PSTPI

31/08/88/BD

Use of CDS/ISIS in MINISIS User Group

Held: Thursday, September 15, 1988

Presented by Pang Siam Choong, USM

Summary:

During this workshop, it has been reported that there are about 3,000 licenced CDS/ISIS users. Apparently, there are many users who are transferring data between MINISIS and CDS/ISIS.

The following comments regarding the use of the CDS/ISIS software have been highlighted:

- More assistance and training regarding the use of CDS/ISIS and also the transfer of data between CDS/ISIS and MINISIS required.

- The CDS/ISIS manual is not comprehensive enough. it is understood that UNESCO do not have the resources to produce a more detailed manual, - suggestion for a third party to produce a more comprehensive manual.

- Request for IDRC to serve as a clearing house for any useful programs or databases which have been created based on the CDS/ISIS software.

The following points have also been reported:

- Some enhancements have already been made in Version "G" for uploading and downloading of data between the 2 systems.

- S.N.D.T. Women's University reported that they have established standards in defining CDS/ISIS databases. They are also providing training in using this package.

- MINISIS user from ALDOC reported that it is possible to transfer bilingual data between the two systems.

BARCODES - EXPERIENCE IN A MINISIS ENVIRONMENT

Technical Operations, Conservation Branch, manages the care and conservation of the motion picture, television and sound holdings of the National Archives of Canada. Since 1985, much of the information required to perform these tasks has been, and currently is, entered using barcodes as an input tool in a MINISIS database environment. Two major factors were considered in opting for this route - (1) Much of the on-line entry was to be performed against validated fields by technicians who were not expected to exhibit developed typing skills or commit to memory the abbreviations for the validated terms, and (2) the numeric shelf location number system in use required a data entry accuracy difficult to ensure when the input volumes and diversity were factored with manual input by the same personnel mentioned previously.

Simply, barcodes are printed information made up bars and spaces of varying width. The reader interprets the difference in light reflected from the dark printed areas to light reflected from the unprinted areas. By comparing the widths of the bars and spaces, the reader recognizes patterns that correspond to characters. Some barcodes pass information only via the dark bars while others use groups of bars and spaces to represent a single coded character. Others use colour contrast or changes in reflectivity between the bars and spaces.

Most barcode formats comprise four parts - a start character, a

finish character, the data area and a check digit. In general, the start and finish characters are configured so that readability is possible by scanning in either direction. The check digit is included to allow the reader to determine that the barcode characters as read were identical to those printed - in other words the check digit helps prevent read errors.

When assessing Technical Operations requirements for a barcode format, several existing types were immediately eliminated. There are over 40 different, and largely non-compatible symbologies available. After eliminating the formats developed for specific applications, as well as symbologies requiring specialized printing and/or reading hardware, we were still left with several popular formats to consider. The UPC type, so familiar in the grocery trade, interleaved 2 of 5, Codabar and others that are all strictly numeric, or numeric with partial letter support were discounted immediately as unsuitable for the identified needs. The only acceptable type that provided numbers from 0 to 9 and letters from A to Z was the Code 39 format. Standard Code 39 additionally supports the ASCII characters that represent the period, space, dollar, slash, plus and percentage symbols. An extension of Code 39 symbology has mapped the assigned values for the complete 128 character ASCII set but we have had no experience with, and are therefore reluctant to comment, on the viability of Extended Code 39. Access to this full ASCII character set requires each character to be prefixed by a specific identifier label in addition to alerting the reader, by means of a two character sequence, that it is to interpret full

ASCII mode. It would seem that full ASCII support would lead to excessive label lengths being required to transmit minimal readable information.

Another compelling feature of Code 39 is that there is an American National Standards Institute (ANSI) standard and a United States military specification (MIL) for this format, making it relatively easy to ensure readers and other hardware will have minimal compatibility problems with readability. It may be worth noting that the symbology for Code 39 has been placed in the public domain, giving unrestricted use of this symbology.

The nomenclature Code 39 is derived from its very structure- i.e. 3 out of 9. Each character is represented by nine elements composed of five bars and four spaces. Three of the nine elements are wide with a binary value of one and six elements are narrow with a binary value of zero. The spaces between characters have no code value. As these inter-character gaps are loosely toleranced and do not comprise part of the code, the actual individual code characters are therefore discrete.

Another aspect considered in the choice of Code 39 pertained to printing. One of the identified applications was for barcoded self-adhesive labels to be affixed to archival documents. Because of the shelf location system in use - a year and month identifier followed by a unique sequential number - it was not possible to consider commercial printing methods as the number of labels required per month can fluctuate by 2 - 3000 units. A symbology that readily lent itself to in-house printing without requiring substantial capital outlay, and yet still affording high

readability, was mandatory. Code 39 possesses a high print tolerance Vs readability when printed with a dot-matrix printer, but under these conditions does have a limitation regarding print density - i.e. the number of encoded characters to be printed per inch. Some of the other symbologies (e.g. interleaved 2 of 5) do not lend themselves to a high read assurance with dot-matrix printing because the density packing characteristics of interleaving eliminates inter-character spacing. The mechanical tolerance of the dot-matrix process and printer make most printers of this type unable to meet the stringent print requirements of interleaved code.

In summary, Code 39 is felt to be the most versatile barcode symbology. It is fully alphanumeric and is discrete. Because its structure gives it a self checking ability it can be successfully printed using the broadest variety of printing processes. The wide industrial use and acceptability also assures a depth of support and variety of hardware suppliers. The developers of Code 39 have recently introduced Code 93, a code that can be read by Code 39 readers without compatibility problems. Code 93 offers unequaled density for an alphanumeric symbology, giving some 13.9 characters per inch but still affords support of the same character set as used by Code 39.

A typical Code 39 barcode should ideally comprise 13 - 16 characters, and the recommended print density would be about 3.5 characters / inch. Because dot-matrix printers compose solid lines via a series of dots, the edge definition - which is not only an electro/ mechanical function of the printer but also

dependent on the printing paper composition - can be poorly defined. At high densities of printing this can cause readability problems, hence the maximum printing density for a dot-matrix printer is not recommended to exceed approximately 6 characters/inch. With an impact printer or a laser printer supported by appropriate software these densities can be increased, but it must be remembered that our intention was to utilize existing , relatively inexpensive technology.

The printer currently utilized is a Hewlett-Packard model 2933A factory data printer which also doubles as a conventional line printer. Standard H-P ribbons are used to print the barcodes, but it has been found that better barcodes are printed if a new ribbon is used first to print a few pages in the line printer mode. This precaution ensures that any excess ink present does not confuse the transition from dark to light so essential for printed barcodes. The barcode programmes are written in Microsoft Basic 100 and run on a Hewlett-Packard HP150 microcomputer. The only minor problem inherent in Basic 100, and it is believed to also exist in GW Basic, is the presence of an invisible implied plus sign at the beginning of numeric values. An extra blank is also appended at the end of the value but does not appear to be of any concern for this discussion. In conventional display situations this invisible plus is not evident, but in printing barcodes it is translated into a blank space upon reading. In programming, this blank space is eliminated by using an IF-THEN statement to determine that the number is actually positive, followed by a MID$ function to print only the characters that

follow this leading blank. The largest single programming difficulty is the definition of the precise spacing requirements so necessary for tractor fed label rawstock to ensure individual label integrity. It must also be remembered that barcodes are machine readable only, so provision has to be made for a human readable representation of the code to be present. It has been found that the printing of these characters either above or below, and with the same height as the barcode is the most satisfactory method.

The initial programs performed the necessary calculations to determine the checksum value, search for that corresponding character in a lookup table composed of a series of DATA statements, then print the composite barcode. The logic of the checksum is the modulus 43 sum of all the characters in a given string and is printed as the last data character. For example, the total numeric value of "ABC123$", from the lookup table, is 78. When this number is divided by 43 it produces a remainder of 35. The alphanumeric assigned to 35 in the same lookup table is the letter Z. In this case the barcode would be printed and read as "ABC123$Z". The check digit will only verify the data content of the string, not the order of the characters. Our experience with readability has led to the discontinuance of this feature. The checksum is no longer determined or printed. Program execution has been speeded up, as the dropping of one character has naturally shortened the length of the printed barcode, hence speeding up the printing process.

The decision to drop the checksum had to be considered carefully,

and was taken before the formal introduction of the barcode input changeover. Published estimates of a mis-read of Code 39 indicate a probability of 1 substitution error in each 3 million characters scanned. These results were verified in our own testing phase using in-house printed labels and Hewlett-Packard HP92915A and HP92916A Barcode readers. These units were configured with HP2392A terminals and HP150 and Vectra microcomputers. All the readers were fitted with the optional high resolution tip wand. It should be noted that the CAPS key on the terminal keyboard must be on, as the reader is configured to merely substitute for the keyboard. An internal optional switch disables the check digit interpretation feature in these readers. This latter feature is the reason why a initial decision has to be taken as to whether or not to use a check digit, as barcodes with a check digit will display this digit as a normal character when the reader read option has been disabled.

Another reader switch option allows selection of carriage return to be enabled or disabled at the receipt of a successful read. When enabled an internally generated carriage return is appended to the transmitted data. In the case of our MINISIS database this return prompts for the next field to be displayed. Coupled with an audible double "beep" upon a successful read, this feature enables repetitive input to be performed without referring to the display screen for entry verification.

Readability experiments were conducted using various densities and barcode heights to determine the minimum acceptable parameters for accuracy. Test samples were soiled, defaced and

deliberately smeared to establish reading tolerances for dot-matrix printer generated labels. Most of the current label printings are at between 0.2 and 0.3 inches in height with a density of 5.24 characters per inch and exhibit satisfactory one pass accurate read capability.

The structure of the MINISIS database in use also requires a technical description to be entered. The majority of these fields are validated terms against KSAM authority files, using abbreviations to express the full term. Barcoded sheets corresponding to the potential terms that can be used per field have been printed and compiled in loose leaf binders so that the appropriate term has only to be determined and scanned, then the page turned to the next field. Interestingly enough, these sheets are photocopies of the master pages and are enclosed in plastic sleeves. This latter step is to not only give rigidity to the page, but to prolong its life as the hard jewelled tip of the wand tends to flatten and eventually tear the paper. There have been no readability problems with these sleeved photocopies. However, it should be mentioned that readability can be influenced by factors external to the actual printed code. The angle and speed of scan play an important role in first time readability. The recommended wand angle of 15 degrees to the perpendicular and a scanning speed of approximately 12 inches / second are not onerous, but are usually not the first factors considered in the event of a misread. Our experience has shown that incorrect wand speed and/or angle, rather than poorly printed codes have been the source of the few difficulties noted.

In the event of a problem reading station, determination of the problem can be assisted by the availability of a simple test code. Hewlett-Packard readers have a test code printed underneath the barcode reader as well as in the appendix of the operating manual. Once the possibility of a hardware fault has been eliminated the use of the test code can easily determine whether the fault lies with the barcodes being read or in the method by which the barcodes are being read.

The preceding comments on readability pertain only to the Hewlett-Packard series of wand readers. The technical implementation of wand readers differs from manufacturer to manufacturer and any evaluation should include extensive reading compatibility testing. There are also fixed beam and laser scanning readers. Generally speaking, these readers are designed to be stationary and to read barcodes being passed at high speed in front of their sensors and can be found in industrial and retail applications. Conversely, the wand readers rely on the object to be stationary and the reading wand to be moved. This distinction could be important as a determining factor in any potential future application. The nature of wand reading, where it can be considered the human arm has a fixed pivot point and therefore tends to draw an arc, can be a limiting factor to hand held readers. Theoretically, there exists no maximum length for a barcode, but the difficulty for the human arm to draw an straight line imposes a mechanical limitation on the maximum length of barcode that can be scanned and read successfully. Obviously, this maximum length is influenced by the overall vertical height

of the printed barcode, is therefore difficult to quantify, but should nevertheless be considered as a limiting factor.

There still seems to be a mystique attached to the concept of barcodes. Much has to do with the paucity of widely available publications and application notes on the subject. Many sources of information are highly technical and of theoretical interest only. The intent of this presentation was to provide some practical application notes. Our experience with barcodes has been very positive, did not involve any substantial additional capital outlay and has ensured a level of data integrity and input ease unattainable by any other method.

Roger Easton
Chief, Technical Operations
Conservation Branch
National Archives of Canada
395 Wellington Street
Ottawa K1A 0N3
(613) 952 4266

September 1988

UNIMARC on MINISIS at the Institute of Development Studies

by Alan Hopkinson
Information Systems Manager
Institute of Development Studies
Brighton, UK

Choosing UNIMARC on MINISIS

In 1985, the Institute of Development Studies at the University of Sussex in Brighton, UK, took steps to secure from the UK Overseas Development Administration funding for the hardware and software for computerization of its catalogue and other library processes. After a comparison of seven different software packages the choice was made of the MINISIS software package. It was not a difficult choice.

MINISIS was developed by the International Development Research Centre of Canada (IDRC) ten years ago to fill the need that existed then for a bibliographic information retrieval package. It was developed originally for use by secondary services since IDRC was involved in setting up information systems for disseminating information about development. It therefore adopted the UNISIST Reference Manual [1] as the format on which its data element identifiers were modelled. However, the needs of libraries are not very different from the needs of secondary services and libraries indeed were among the first large users; the libraries of the University of Wageningen in the Netherlands and the International Labour Office in Geneva were among the earliest users. The package was at the forefront in its use of standards, and was able to import and export records using the ISO 2709 format [2] which had also been adopted by the UNISIST Reference Manual. Interfaces had also been developed between MINISIS and a number of other formats used in the international arena such as the AGRIS format used between members of FAO's Agricultural Information System (AGRIS). However, it was not MARC compatible.

In 1982, IFLA and IDRC began to explore ways in which MINISIS could be made MARC-compatible, and agreed to undertake a two-part project; this consisted of a study to determine the feasibility of and requirements for implementing UNIMARC on MINISIS and the implementation of the necessary changes to MINISIS to enable it to handle UNIMARC records. This two-part project was co-ordinated by Henriette Avram for the IFLA Programme Management Committee. Funding for the first phase was provided by the National Library of Canada, the Library of Congress and the British Library. The second phase was funded by the US Council on Library Resources. The MINISIS/UNIMARC project final report was published in 1988 as UBCIM Occasional Paper no. 12 [3]. Following the work, IDRC set out to write additional software to adapt MINISIS to MARC. Separate software designed as an add-on to MINISIS had been written for the National Library of Malaysia but it was decided to add on a completely integrated and more generalisable interface to cope with all the requirements of UNIMARC. One objective of the new software was to enable users to enter data as nearly as possible in the customary ways in which MARC records are created.

To return to the Institute of Development Studies; the choice of MINISIS was an easy choice. As a sister institution of IDRC, IDS had long felt particularly among the library staff that it should participate in the MINISIS project. Additionally, MINISIS, developed as it is by a not-for-profit organization, is less expensive than packages produced by commercial organizations. However, in the past it had not always been British government policy to allow the acquisition of

non-British software packages by institutions funded in the main by government. Now that attitude had changed, but there was still a feeling among members of the development information community in the UK that by taking a Canadian software package, the Institute of Development Studies might be cutting itself off from the rest of the community. Though the choice was easy, the justification would have been very difficult had it not been for the availability of MARC in the package. Its presence was a useful lever to persuade the rest of the development information community -- who had been leaning heavily on the Overseas Development Administration -- that the use of MINISIS would not cut out cooperation with other systems, particularly those that implemented standards; and the all too many institutions that did not have a system that implemented standards would in any case have only been able to communicate with the Institute's system had the Institute adopted their system and no other.

The Institute of Development Studies approached the UK distributor ASSYST Computer Services and since the MARC implementation was still only under development, IDS secured an agreement for additional direct support from IDRC in return for IDS's assistance in further developing and testing the MARC interfaces. (MINISIS is supported directly by IDRC only in developing countries; elsewhere, IDRC has appointed distributors).

Alan Hopkinson, the Information Systems Manager at the Institute of Development Studies had previously, while working at the British Library, been seconded to work full-time for eighteen months on the compilation of the UNIMARC Handbook [4]. Thus, his personal interest and expertise were to prove valuable, not only to the Institute but also to IDRC who needed a user on which to test the UNIMARC implementation.

Implementing UNIMARC

IDS was fortunate in wishing to implement UNIMARC after the initial work had been done. IDRC had already written an additional program to assist in the conversion of MINISIS records into the MALMARC format which could have been adopted. It was decided not to use this but to go for IDRC's generalised programs. Incidentally, these generalised programs are also being used at CICH in Mexico where the Mexican National Bibliography is produced on MINISIS.

To secure maximum compatibility within the UK, IDS ought, obviously, to have used UK MARC. However, being involved in development, IDS has stronger links with similar organizations the world over than with any other UK institutions. It was decided to adopt UNIMARC as the format on which to base the data elements for two reasons; firstly, it would be of more general use to the development community at large if an implementation of MINISIS using UNIMARC rather than UK MARC were developed; secondly, UNIMARC is more suitable for implementation on a system using the relational database model than are UK MARC and most of the national formats that pre-date UNIMARC. UNIMARC also includes the capability to set up databases consisting of a mixture of serials, monographs and analytics (though it has to be said that its data elements for analytics need expansion to make them viable).

Having chosen UNIMARC, it was necessary to bear in mind that there would also be options relating to extent of adherence to UNIMARC specifications at every instance.

MINISIS does not have a three-digit tag like UNIMARC. Instead it has a four-digit tag of which the first character is alphabetic (modelled on the UNISIST Reference Manual), and the fourth is in reality a subfield identifier. It was decided to adopt a rule of thumb for equivalences; tag 100 would be A000, 200

would be B000, 300 would be C000, 700 G000, etc. with 010 Z100. This was not in line with earlier experiments which had suggested 010 become A100, 100 B00 and so on, but it seemed more logical.

MINISIS does not allow repeatable subfields in its method described above. IDRC had implemented for MINISIS a new system of subfielding which corresponded exactly to the method found in UNIMARC and other ISO-2709. IDS decided to adopt this throughout. In the sample data definition table in Elaine Woods' report there is a tendency to try to use MINISIS subfields where possible. it was decided not to use MINISIS-type subfields in connection with any data that would constitute part of the MARC area of the record, but to use a system of identifying subfields similar to MARC practice where decimal value 31 is the subfield identifier. IDS decided to use $ as it is the value used in UNIMARC documentation to represent decimal 31. Only the fields used in UNIMARC are treated in this way. Other private fields do not have subfielding. Incidentally this method of subfielding adopted from UNIMARC has been found to be logically preferable to the one employed by MINISIS which does not allow repeating subfields. And of course, cataloguers the world over are now more accustomed to embedded characters for subfields than to any other method.

Elaine Woods' report lists the problem areas in UNIMARC/MINISIS compatibility.

a) a limit of 256 tags in MINISIS
b) non-repeatability of subfields
c) the limit of 9 subfields
d) the difficulty of handling fixed-field data

The problem of the limit on the number of tags is reduced when a different method of dealing with subfields is introduced, since in MINISIS each subfield counts as a field. It is unlikely that a system would require 255 fields, but if it required more there are ways round the limit. IDS has not found this a problem.

The embedded subfield technique (i.e. the technique used in MARC formats) solves the problem of the non-repeatability of subfields.

A special program (in MINISIS jargon an exit) has been written to cope with fixed field data. However, in IDS only field 100 has been implemented and other coded data fields have been treated as variable length fields.

UNIMARC indicators have been inserted in the text at the start of each field (in the position where they belong on a UNIMARC tape). Where they are blank they are ignored as it is easy to add them on output. At the request of IDS, the MINISIS team have devised a procedure whereby up to 4 characters can be added at the start of each field during data entry. This will not be available until Version G of UNIMARC (due to be issued in the next few weeks). This will allow, say, blank, blank, dollar a to be added at the start of each field where these will always occur.

Other small changes have been made as a result of Elaine Woods' report, the main one being that certain elements in the record label may now be generated from data stored in the record.

Version G will also allow records of over 4096 characters, but even this limit has not been felt to be a problem.

The way that subfields have been implemented is very neat even though it is an add-on feature to the basic system. A table containing each subfield of each

field is created and constantly accessed by the program to allow the processing of the subfields. There is no automatic validation of subfields at data entry. However, a cataloguer can look at the records that have just been entered and change form the data entry print format to any display format and see if the tagging has given the desired result. The fixed field data elements can have validation of values and defaults can be entered automatically. The table controls the creation of indexes. Thus, in IDS field 200$a and $e (title and other title information) are inverted but statements of responsibility are not. Each database can have a different MARC table to allow different processing for the same subfields if required. Most systems will have only one table and this table is created by a special database into which the systems designer enters each subfield with the appropriate instructions for each. In IDS, there has been a requirement for separate tables but they have been created from the master table by copying it and then editing.

IDS now has a database of UNIMARC-like records. They are convertible to UNIMARC by using the ISO 2709 conversion program (ISOCONV). IDRC has written an exit which enables $ to be converted to ascii 30 (or any other conversions to take place). ISOCONV allows characters to be added to the exchanged record, so blanks omitted in the data entry can be added at this stage.

These conversions have been prepared, so now records can be exchanged in UNIMARC. However, no exchange has yet taken place using UNIMARC.

IDS has taken data from two external databases using the ISO 2709 interchange format, those of the United States Agency for International Development and the World Bank Library. USAID do not use AACR so the records would in any case need a great deal of editing, whatever tagging scheme had been used. The World Bank uses AACR but does not use a common exchange format. This is unfortunate as the records will need a great deal of editing to align them with the UNIMARC database so at the moment there are no plans to combine them but they will be stored separately. Had the World Bank implemented UNIMARC or even US MARC there would have been no problems. An example of the problems of conversion is that the World Bank does not separately identify personal from corporate authors.

While on the subject of exchange it is interesting to note that Dr Luisa Cabral of the National Library of Portugal kindly gave IDS a copy of the data element definition of their MINISIS implementation on the CDS/ISIS software package. IDRC has written a conversion program to enable the transfer of MINISIS data to CDS/ISIS and IDS has adapted this slightly to cater for MARC transfers. Data have been transferred from MINISIS to the Portuguese database, and the transfer worked first time.

Testing the MINISIS Exits

IDRC developed the MARC exits as an add on to the basic MINISIS package. These have been developed in version F of MINISIS. Version G is now on its way, and the IDRC MINISIS team wanted to have any problems ironed out before version G was due. IDS staff have made a number of suggestions for enhancements. One interesting enhancement concerns the print formatting. It is the tradition in the UK at any rate, though not in North America, for punctuation to be generated from subfield identifiers. In US MARC, punctuation is entered as well as the subfield identifiers. At first the MINISIS/UNIMARC implementation allowed only direct replacement of a subfield identifier by up to 6 characters; now an enhancement has been added; a pre-defined literal (usually a right closing parenthesis ')' in practice) can be added at the end of a subfield.

Another problem occurred in connection with punctuation; a full stop used to mark an abbreviation might be followed by a subfield identifier which is replaced by a full stop, the result being two full stops. The program has now been modified to remove duplicate full stops from different sources appearing together. It will not eliminate duplicate full stops to mark omissions, as they originate in text.

Alan Hopkinson visited the MINISIS team in October 1987 to help with the testing and make suggestions for enhancements. Records have been provided from the IDS database to assist with the test alongside a set of records provided by the Library of Congress. And in the future, IDS has agreed to provide a sample database of records along with print formats conforming with ISBD, and computer jobs to enable sorting and printing of catalogues.

The only area that remains to be tackled is that of record linking. At the moment, IDS has only monographs and serials in its database. Links between serials are at the moment made by means of textual notes, so the linking fields are not used. However, IDS Library is shortly to start to add journal articles to its database and it is hoped to make links between the analytic and the record of the serial in its own right. There should be no problem in doing this in MINISIS. The test of the MINISIS/UNIMARC interface will be whether or not it is possible to produce the 4xx linking fields of UNIMARC for which no additional software has yet been written. Because MINISIS is a relational database, these 'joins' on two records will not be stored as one record but as two records with one containing a link to the other, most probably using the internal database number of MINISIS. Nevertheless, it should be possible to export the fields of the subsidiary (in this case serial) record -- or at least a subset of them -- embedded in the appropriate 4xx UNIMARC field.

While on the subject of the relational feature of MINISIS, the corporate authors in the IDS implementation of MINISIS at the moment are added to the record in the usual way. At the moment, an exercise is being undertaken to convert all the names used in the catalogue records into authority file records, so that in future the cataloguer will enter the database number of the corporate author and this will automatically bring in the corporate body authority record with all its see also and see references. The authority record is being based on the UNIMARC Authorities format. Indeed, one use of formats like UNIMARC is for systems designers wishing to model a system on work that other people have done to save having to re-invent the wheel. IDS feels that its adoption of the UNIMARC Authorities Format is akin to this since it is unlikely that anyone would exchange authority records. Indeed, one cannot see many possibilities in the future for exchanging authority records unless some kind of authority number is establsihed. Because of the nature of the documentation held by IDS Library, the priority is for a corporate body authority file; personal authors will come later.

Conclusion

Exchange formats are now becoming more important than ever before. They are no longer the preserve of national libraries as it becomes easier for other kinds of organizations to get hold of computers for their bibliographic data processing. Indeed the next version of MINISIS after the version G due shortly will be able to run on microcomputers. It is vital that a software package that is as universally available as MINISIS can support UNIMARC, and IDS is pleased to report that its testing of the package has proved that UNIMARC can be supported to its satisfaction.

MINISIS DATAENTRY MADE EASY

OBJECTIVE

The underlying aim of this presentation is to provide a good alternative method for data entry to the **MINISIS** Data Base which, as is well known, accounts for the best part of the whole data-base operations. True, there are **ENTRY** and **BATCHIN** processors in **MINISIS** just for this purpose; but both have some drawbacks. In **ENTRY** processor, for example, if an error is made while entering data in an earlier field in a record, there is no way one can modify it going back to that field unless all the remaining fields in that record have been gone through. On the other hand, the use of **BATCHIN** processor is rather cumbersome with care being taken for delimiters before and after each Tag and data field. The programs developed during the course of this study go a long way in easing out the data entry job. The purpose of this study, therefore, is to give relief not only to the user by giving him a user-friendly environment to accomplish his data entry job, but also to the System Manager who is not taxed much to share the limited resources at his disposal. It was precisely this reason that the idea was conceived as a matter of necessity. It was one thing to have an idea, but beleive me, quite the other when it came to giving shape to this idea. But there was no going back now and the task was carried on to its logical conclusion, despite the time constraint, thanks to the fine cooperation and team spirit displayed by my colleagues in the Computer Centre of the National Council of Applied Economic Research.

An attempt is made in this study to develop a package in **TURBO** Basic (Version 1987) to be run on stand alone Personal Computers. TB, as it is commonly known, can be supported on any IBM Compatible PC with MS-DOS or DOS-2.0 or above. The package consists of three routines. The user is quite relaxed using this package as he is in continuous dialogue with the system and has a wide range of special/extended function keys to choose from depending upon his needs at that time. These three routines aim to:

i) Create a Control File equivalent to the Correspondence Definition File in MINISIS.

ii) Use the step (i) file as input to create a **FORM** that will be displayed on the screen and allow the user to enter/modify the data; thereby creating the data file.

iii) Transfer data from the data file created in step (ii) into the ISO-2709 format.

This file can then be transfered to the main System using any standard package like Reflection to be finally dumped into the **MINISIS** Database.

ADVANTAGES TO THE USER

i) In ISIS too a user has the option of entering data as per the form displayed on the screen. But he is not given the freedom of arrow movements to go up or down, left or right within that record. If he commits any mistake while entering data, he has first to go to the end of that form, go to the modify mode, fetch that record and then do the necessary corrections. While using this package, the user can modify the data then and there and is allowed all the arrow movements enabling him, thereby, to make modifications within that record. He is also given the option to modify the record at a later stage if he so desires.

ii) In **MINISIS**, if the user is entering data through **ENTRY** processor and if he has made some error, he still has to go upto the end of that record and only then he can make necessary corrections. Again, the use of this package gives him advantage of doing modifications on the spot.

ADVANTAGES TO THE SYSTEM MANAGER

The System Manager is spared the botheration of allocating one or more out of his limited number of terminals for data entry to the **MINISIS**, particularly in an environment where a good number of computer related studied are concurrently going on, as is the case at our Computer Centre. This helps in improving the response time of the System, a great advantage indeed.

DESCRIPTION OF THE ROUTINES

Routine - 1:

This routine allows, through a continuous dialogue, the user to supply a set of information as to whether the ISN is to be part of the data, ISN's are to be auto generated, the starting ISN etc. and another set of information about the tags, names, lengths and types of each of the data fields to be used in the data base. The program then goes on to generate the starting row and columns for each of these fields, to be used to design the screen. All this information is stored in a file which is the control file and is equivalent to the Correspondence Definition File in MINISIS.

Routine - 2:

This program is the heart and soul of this entire exercise. It inputs the control file generated above in the Routine -1. It then uses the information from this file to design a FORM on the screen and then prompts for the data entry into the form. The data entered gets on recorded in a datafile. The choice of using function and other extended keys like arrow keys, Pg Up/Pg Dn keys etc., gives the user all the freedom to play around with the

data within or outside that particular record. The data entry job and the modifications go on simultaneously. While the use of a particular function key enables the user to switch mode to modify, another such key allows him to append data to the existing data-file and yet another one allows him to exit from the data entry job. The Pg Up/Pg Dn keys help him scan through the records. Within a particular record the arrow keys take him up or down or sideways to any desired field at which stage he can enter/modify the data. The CTRL-R key is reserved for entering data in repeatable fields. Once this key is pressed, the name of the field to be repeated gets appended in the form at that location and the rest of the form gets extended. At this time the data can be entered. The entries made for such fields are recorded in a seperate output file (the append file) which along with the main datafile becomes the input for the third routine. This append file contains the actual data for the repeatable field, its length and address at which it is written. The use of CTRL-U key enables the user to delete a particular record. The record is not physically removed from the data file but is marked such. It is discarded when the data file is converted into **ISO FORMAT**.

Routine -3:

This program uses the information from the earlier two routines including the datafile and the append file created in **Routine -2** and converts the data into **ISO-2709** format of records consisting of 80 characters each. The ISO Leader/Header, directory for each data field etc. are created and these together with the actual data are written in contiguous form to create the output file taking care to limit each logical record to 80 characters, except the last which contains the remainder of the data from each physical record.

This output file can then be copied on to the main system using any standard transfer package like 'Reflection' and finally dumped into the **MINISIS** data base using **ISOCONV** Processor.

The listing of all these three routines is appended.

USE OF FUNCTION KEYS

Besides being given the choice of arrow and page movement keys, the home and the end keys, user is allowed the option of using three function keys: each for a specific purpose. These are detailed as under:

i) **Function Key - 8:**

This key allows the user to exit from the data entry job.

ii) **Function Key - 9:**

The use of this key enables the user to choose any of the records already created for modification.

iii) Function Key -10:

This key allows the user to resume data entry and append the records to those that already exist.

Before the end, I must admit the possibility of bugs being present in this package as there was not sufficient time to do a thorough checking of the programs with various data sets in a limited time of about three months because of pre-occupation with other office commitments during this period. I will be too glad, therefore, to welcome any suggestions/modifications in this package and would request you to write to me at my New Delhi address for any bugs if and when encountered by those of you who may wish to use the package. On my part, I can only assure you that we in the Computer Centre at NCAER would strive to make necessary modifications in this package to make it bug-free.

ACKNOWLEDGEMENTS

I am indeed grateful to Mr M A Gandhi, my colleague at NCAER, without whose willing cooperation and help, especially in developing these programs, I could never have completed this study. I am also thankful to Dr I Z Bhatty, the Director General of NCAER, Mr B K Mitra, Head of Computer Centre and my other colleagues in the Computer Centre for their help and encouragement. Finally, I am grateful to IDRC for sponsoring me to this conference.

******

MINISIS Application at AVRDC

by

Teng Hui Hwang

Library and Documentation Services
Asian Vegetable Research and Development Center

Background

The Asian Vegetable Research and Development Center (AVRDC) is devoted to the improvement of vegetable crops and their production in tropics and subtropics. Presently, AVRDC research concentrates on six principal crops, viz., Chinese cabbage, mungbean, peppers, soybean, sweet potato, and tomato.

One of the AVRDC objectives is to "develop and provide basic information on improved production and marketing for use in extension services in participating countries." AVRDC has thus place emphasis on the development of communication media such as newsletters, workshops, and bibliographic services is essential to promote the exchange of ideas among scientists and to provide researchers and extension agents with scientific information.

Tropical Vegetable Information Service and MINISIS

A project of the Tropical Vegetable Information Service (TVIS) was offically initiated at AVRDC on 1 July 1984 with a grant from the International Development Research Centre (IDRC) of Canada. This project was established to strengthen and to extend the existing specialized information analysis activities of Library and Documentation Services on tropical vegetables. The objectives of TVIS are to:

1) collect, store, and analyze documents on Chinese cabbage, mungbean, and soybean rust;
2) establish a computerized information retrieval system using MINISIS; and
3) conduct a workshop/symposium on mungbean as a means of bringing together world scientific information on this crop.

AVRDC joined the MINISIS family on 11 November 1984, when Mr. Michael Sherwood, the MINISIS Project Advisor, installed the MINISIS on our HP3000 and gave the training course until 30 November 1984. Fourteen AVRDC staff members and three participants from outside attended the course. The AVRDC Library Information Retrieval System was completed by Library staff using MINISIS on 1 May 1985. The system consists of the main bibliographic database and three supporting databases, viz., thesaurus, institution, and serial holding (Fig. 1). Presently, there are more than 20,000 records in the system.

Other Application of MINISIS

Those non-bibliographic application of MINISIS at AVRDC inculde.

Germplasm

A germplasm collection of over 30,000 accessions of AVRDC principal crops is maitained at AVRDC's Genetic Resources and Seed Units. The passport data, characterization of each accession and seed distribution records are kept in the germplasm database.

Mailing List

The mailing list database holds over 7,000 address of institutions and individuals who are receiving AVRDC publications.

Personnel

This database includes the personal data, leave, salary, and insurance of AVRDC employees.

Trainee Data

A total of 791 trainee records are stored in this database. Personal data such as education and work experience and project reports of summer students and Ph. D. students from various countries are collected. Updated information of AVRDC trainees enables AVRDC to evaluate the usefulness of the training program in career promotion.

Vegetable Scientists Directory

Personal data, education, expertise, and current address of scientists are categorized according to vegetable crops. This database, known as the Vegetable International Professional Service (VIPS), enables AVRDC to identify scientists under a specified crop and research field, when it needs experts to assist in carrying out its mission.

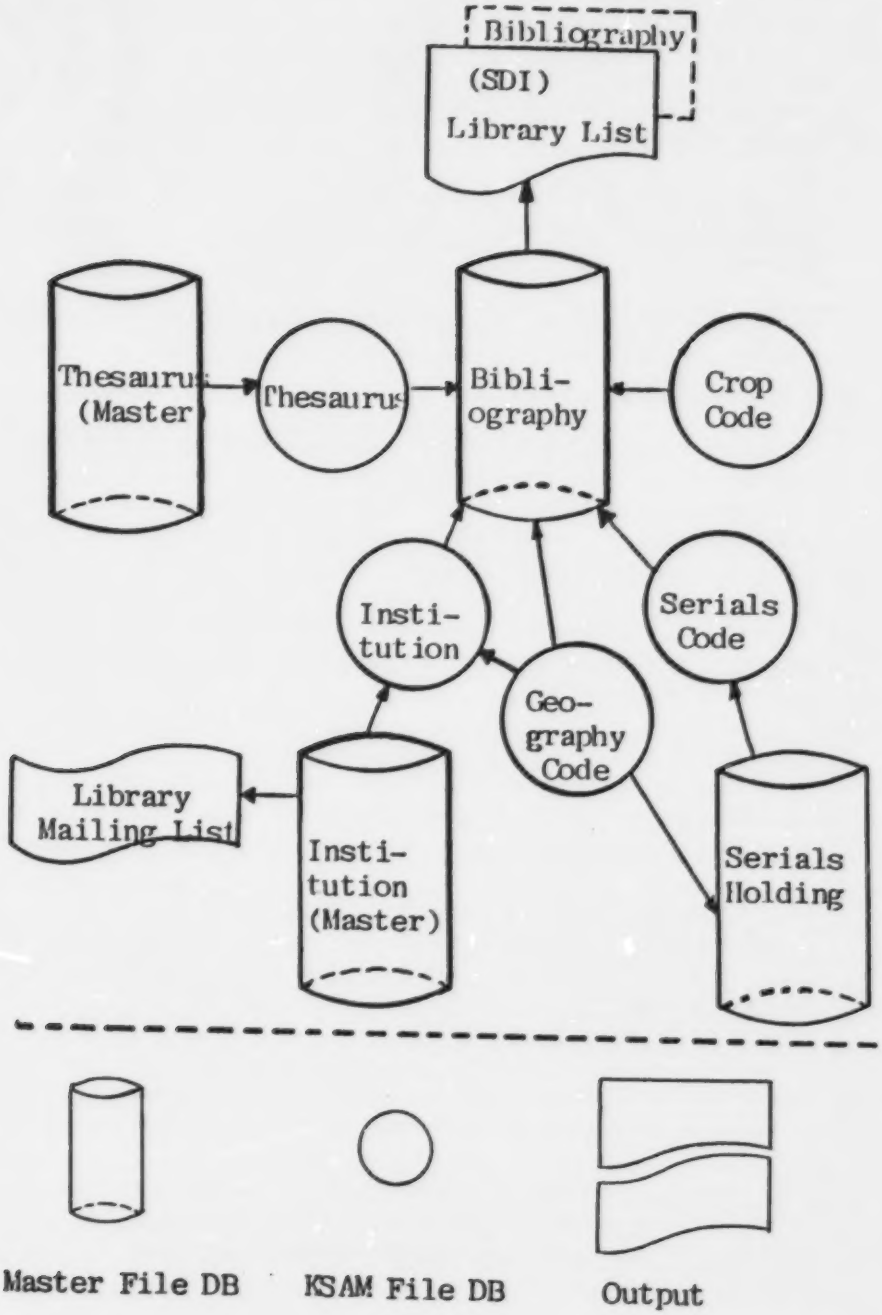
Conclusion

MINISIS not only support AVRDC in information services, but also in research management, especially the AVRDC Library, being the first library in Taiwan to utilize MINISIS, has advanced itself among other institutes dedicated to information services and it will be a milestone of library automation and specialized information services in Taiwan.

It is our deepest hope that MINISIS will continue to be our great support and base in the future development of our services which AVRDC has committed to assist national and multinational vegetable research programs.

Fig. 1

STRUCTURE OF AVRDC BIBLIOGRAPHIC DATABASES



DEVELOPING A COMPUTERIZED INFORMATION SERVICE

A note on the S.N.D.T. Women's University Library Information Centre.

The S.N.D.T. Women's University was selected in 1985 to serve as one of the location of a six of Information Centres being established by the University Grants Commission to provide information support to the students, faculty and scholars in Universities and Colleges. The subjects allotted to this National Information Centre are Sociology, Women's Studies, Home Science, Special Education, Library and Information Science and Gujarati language and literature.

This note describes the developmental work involved in setting up the Information Centre. Both work prior to selecting a computer system and the work undertaken in the first few months after the installation have been described.

The University viewed the provision of information services as a primary responsibility of the Library and from the beginning, the Information Centre was placed organizationally within the University Library system with the University Librarian in overall charge.

The general objective of providing information support could be met in several ways. One possible model was that adopted by the National Science Information Centre set up in 1984 at the Indian Institute of Science, Bangalore. An examination of the orientations of the subject allotted, their literature and the secondary services available indicated that there was considerable variations between the subjects. The distinctive features of the subject areas led us to conclude that offering personalized alerting services by the acquisition of international bibliographic databases, creation of interest profiles and periodic matching of the profiles against the bibliographic tapes, as was being undertaken for the natural sciences, would neither be satisfactory nor sufficient. After intensive discussions amongst ourselves and informal consultations with faculty members and other library and information professionals, we opted for an alternate model.

Considering the needs of Indian faculty and scholars and the nature of the commercially available international computerized information services in the allotted subject areas, we opted to locally create bibliographic databases, use them to give personalized alerting services by matching interest profiles against them and back up the services by providing a document delivery facility. With this in view we began our computer shopping.

Selecting, Acquiring and Installing the Computer Systems

A Technical Advisory Committee, consisting of experts in hardware and software from institutions such as IIT, BARC, TIFR, NC ST, CMC and individual consultants was set up by the University to advise on the selection of the system with the University Librarian as the member Secretary. A note on the nature and quantum of work expected to be performed by the computer was prepared by the Librarian. The note included, among other things, an estimate of the number of records to be annually added, the average length of each record, the amount of printing work, the number of queries, etc. Based on the note, the Advisory Committee detailed the specifications of the desired system. These specifications were sent out to about 35-40 vendors with a request to quote.

While awaiting the submission of the quotations from the vendors, we began to search for an examine reports of various readymade software packages. Using the Unesco Handbook of Library software(1) and current library literature a few probably useful packages were identified. These included MINISIS, BASIS, etc. The equipment necessary for installing MINISIS and the conditions under which it would be supplied were clarified through

correspondence with the Delhi Office and International Development Research Centre. Advice on the capabilities and support for MINISIS and other packages was sought from UNESCO and others. Feedback from other users was also obtained.

A meeting of the Technical Advisory Committee with the vendors who had quoted, was arranged. The Committee questioned each vendor individually to seek clarifications about the capabilities, structure, architecture, price, etc. of their hardware. About five vendors were short-listed and were asked to indicate within two weeks, their ability to supply software such as those identified or similar packages. At the end of the stipulated period only one vendor had quoted for a package. Some vendors had, however indicated their willingness to develop the software required within a time period of 3 weeks to six months. One vendor, M/s. Blue Star Limited, indicated the use of MINISIS on the system quoted by them. At a subsequent meeting, the Committee opined that the time-frame for developing the software as indicated by the vendors was unrealistic. The cost of the quoted packages was excessively high. It therefore recommended the purchase of Hewlett-Packard 3000/42 Computer Software through their Indian agents M/s. Blue Star Ltd., and the acquisition of MINISIS from IDRC. Clearance from the Department of Electronics was sought to import an HP 3000/42 Computer and the order placed on receipt of the clearance. Subsequently, exemption from customs duty was obtained from DGTD and the Ministry of Education.

Purchasing the necessary airconditioning units, servo-voltage stabilizer, isolation transformer, preparing the site and installing the computer, involved a lot of co-ordination work and took a little more than three months. The system was installed and was ready for use exactly one year after the first meeting with the vendors.

Staff Recruitment and Training:

Early in 1986, soon after the UGC's approval about setting up of the information Centre was received, staff training initiatives were taken. While the Centre would have its own core personnel, it was realized that all staff members of the University Library would contribute in some way or the other towards the work of the Centre.

Much of the activities of the Information Centre would involve extensive subject specification of both documents and queries and interests. It was also recognized that library staff members would require additional inputs in these areas to improve their performance. A conscious, development-oriented, on-the-job training experiment was carried out in the first half of 1986 to bridge the gap between theoretical knowledge and practice, and to help staff transfer classroom learning to actual situations.(2)

The staff of the Reference Department of the University Library were maintaining index cards on women, as the University Library generally received many queries on various issues relating to women. The Centre for Research on Women's Studies within the University, also had a Documentation Centre which was doing similar work. The staff of the Research Department and CRWS' Documentation Centre were brought together and entries made by the two units for articles in Indian journals received during October December 1985 were collected. Over a series of group discussions and tutorial-type sessions spread over a six week period, the format, descriptors, cross-reference of the entries and in fact, occasionally, even the very inclusion of particular entries in the index were discussed. The entries were then sorted, arranged and edited, and a name index prepared. The work was then published as a prototype copy of quarterly index.

The recruitment process for the information Centre staff was begun late in the first half of 1986. Within a period of two months, two persons with a library science background were selected - one with experience for the post of Assistant Librarian and a fresh graduate for a post of Research Assistant. Suitable persons for the posts of Co-ordinator, Systems Analyst and a second post of Research Assistant were not found. Recognizing that it was important to have someone to co-ordinate the work of the Information Centre, the University deputed the existing

Deputy Librarian of the University to serve as a Co-ordinator of the Information Centre. With this small core staff of 3 individuals, the Centre was formally established on October 1, 1986.

Building the Infrastructure:

The period between the establishment of the Information Centre and the arrival of the computer was used for some basic work such as location of potential users, availability of documentary resources, identification and procurement of various Thessurili, manuals to be used, etc. Apart from collecting information on University departments in the subject areas, their size and interests of specializations, journals subscribed, completed research, etc. manual indexing on at least one of the allotted subjects - Women's Studies - was undertaken.

A draft of the Thesaurus prepared by the National Council for Research on Women (USA) entitled "The Women's Index : A thesaurus of language that describes women's lives and work" was used as a base to index Indian periodical literature received in 1986. Select international journals were also indexed and topical bibliography prepared in April 1987.

The Information Centre was able to bring out 3 publications –

(1) Women's Studies Index 1986: a guide to Indian periodical literature.
(2) Guide to Women's Studies 1986: an index to select International journals.
(3) Nutrition and Women 1985-86: a bibliography.

Towards the end of April 1987, a small training programme on mini-micro CDS/ISIS was arranged. Following this and using a PC-AT available at the University's Computer Centre, an index to Home Science Journal articles received during the first half of 1987 was developed on the CDS/ISIS package.

Thus by the time the H.P. Computer was installed, the staff were familiar with (1) the scope and coverage of two of the six fields of interest, viz. Women's Studies and Home Science, (2) the problems of subject specification, (3) the decisions involved in arranging and editing entries and (4) the mini-micro CDS/ISIS package. They were thus cognitively and attitudinally prepared to draw the maximum benefit from the training of HP 3000/42, which had been installed and the MINISIS software package. The former training was conducted by the vendors M/s Blue Star Ltd., and was of a week's duration. The MINISIS training and installation was undertaken by IDRC. A two week training programme was conducted at Mysore jointly for two user institutions viz. S.N.D.T. and Central Institute of Indian Languages, Mysore which had H.P. Computer facility.

Defining the Database:

Working on the HP 3000/42 and using the MINISIS package, the first task to be undertaken was defining the database to be created. at this stage, a number of decisions had to be taken such as : would there be one large index or separate indexes for the subject areas, what would be the fields, etc.

One or Many ?

Should we create one large bibliographic database for documents in all the subjects of interest (Home Science, Sociology, Women's Studies, etc) and in all formats (books, journal articles, thesis, etc) or should we have multiple databases one for each subject area?

We estimated as high as 25–30% overlap between the subject areas, particularly Women's Studies, Sociology and Home Science. Multiple databases for different subject areas would mean entering the bibliographic details for a record belonging to two subjects, twice. A large unified database would save both data entry time and disc space and would therefore be more economical.

On the other hand, the controlled vocabularies to be used to specify the subjects were different for each subject field. This meant that occasionally similar concepts were represented differently in two thesauri (eg. 'Working Mothers' (Sociology) was 'Mothers working outside the Home' (Women's Studies)) while the same terms were sometimes used in different contexts in different subject areas (eg. Social Development in Sociology was used to denote development of social facilities while in Home Science it referred to the development of social skills in a person, particularly in a child). We therefore found it necessary to have different fields in a record for the controlled vocabularies of the different subject areas. The structure of each record would need to accommodate more fields in order to provide for different vocabularies in the same record.

Also, since queries, SDI and other searches were mainly expected to be on subject specification fields, we proposed to indicate that field as a default search/query field. This would not be possible if we used more than one field to specify the subject.

Another issue related to the use of the Thesauri. We proposed to use the thesauri not only in indexing, but also to input these thesauri into the system enabling us to use them at search stage to move easily from 1 term to its broader, narrower or related terms. In MINISIS, this facility was available but limited to one thesaurus for each group within an account.

To accommodate and reconcile these various requirements, we opted for a unified bibliographic database. This large database we called 'SUCHAK'. We then created projected subsets of the larger database for different subject areas. These we called HSUCHI (For Home Science Index), WSUCHI (For Women's Studies Index), SSUCHI (For Sociology Index) etc. These projected subsets were placed in different groups within the same account. In each record, separate fields were earmarked for the controlled vocabularies of different subject areas. We also specified one additional field which we called 'discipline'. While entering data, we would use this field to indicated whether the record belonged to Home Science (HS), Sociology (SO), Women's Studies (WAS), etc. One or more discipline could be specified per record. The initial restriction for the projected subsets specified that if the value of the discipline field was HS, the record was part of HSUCHI, if it was SO, it was part of SSUCHI and so on. Thus, for example, if there was a research report on dowry, while entering the data, we would enter it in SUCHAK, and enter the values SO and WAS in the discipline field. The record would then appear both in SSUCHI and WSUCHI.

We also decided that while entry of data would be through SUCHAK, search would generally be made on the projected subsets of HSUCHI, WSUCHI, etc. We were also, thus able to provide different default query fields. Moreover, since the projected subsets were in different groups, using multiple thesauri would also not be difficult.

Thus we managed to combine the advantages of having one database and many databases, by a slight increase in the complexity of the structure of the database.

SPECIFYING THE FIELDS

The fields of each record have to be specified in MINISIS, using tags of four characters, the first of which should be an alphabet and the remaining numerals. Elementary and subfielded fields should end in zero, which the subfields could end in 1-9. We adopted a convention of using tags beginning with A for fields describing the physical document, B for fields describing subject contents and Z for local requirements.

In specifying the fields for physical descriptions of the documents, we were keen to use international standards, and thus keep our options open for future exchange of bibliographic data. Since we viewed our database as an index of sorts, we opted to use Unesco's Reference Manual. A small group of the Library staff, went through the

Reference Manual, debating whether each field mentioned in it be provided for in SUCHAK. A few of the fields in the Reference Manual were not relevant, but we were still left with a very large number of fields and subfields. At a second scrutiny we eliminated a few more fields which we felt would be very sparsely used. In order to simplify the field specification and yet provide for the internationally recognized individual fields expected in a bibliographic description, we generally opted for the inclusion of the field as such, but were more selective at the subfield level. Wherever possible we tried to use same or similar tags. eg. in RM, A111 is the tag for personal author of an analytic, with subfields 1 for name, 2 for established form, 3 for real name, 4 for pseudonym, 5 for former name, etc. We used field tag A110 for author analytic field, but opted for only three of the subfields, A111 for name, A114 for pseudonym and A119 for role.

For the subject description, we provided fields for controlled vocabulary in all the subject areas. There fields were repeatable and hence any number of terms could be used to describe a subject. At this stage we had to decide how to deal with geographical and chronological delimiters to subject descriptors. In a co-ordinate index it is possible to delimit a subject search with respect to a geographic region byu the use of two separate and independent descriptors, one for the concept and the second for the region. Thus, for example, scheduled tribes in Madhya Pradesh could be given two subject descriptors (1) Scheduled Tribes and (2) Madhya Pradesh combining them at the search stage to limit the query. However, in order to reach a wider group of users, we proposed to print the database as annual indexes to the literature of each subject. In these printed indexes, we thought that it would be more meaningful to have geographical and chronological descriptors as delimiters to the concept terms rather than as independent descriptors. Perhaps, the pull of the methods used in manual system of the past was strenger, but indicating geographical and chronological concepts as separate, independent descriptors was not favoured by us. We decided to indicate space and time concepts as delimiters to the main terms. Thus, for example, within B120 which was the field for Women's Studies controlled vocabulary, B121 was used for the main term, B122 for the first delimiter and B123 for the second delimiter. We also created a repeatable field for uncontrolled vocabulary, which could be used for concepts/terms not provided for in the thesauri, but likely to be used in a search. The term in this field could be used periodically to review whether any modification to the controlled vocabulary was necessary. In addition to controlled and uncontrolled subject descriptors, there were two other fields in this set: one, as mentioned above, to identify the subject area to which the record belonged and the second for any proper name (of a person, institution, meeting, etc.) which was the subject of the item.

The 2 fields were used to indicate the location of the document, the call number, the origin, the data of entry, the indexer's name etc. These were basically for internal use, to locate items, for self-evaluation and review of the department, etc.

Building the database

Building up the SUCHAK database began in a phased manner. We started by including in it materials in only three of the six subject areas - Home Science, Women's Studies and Sociology, hoping to take up work in the remaining areas at a slightly later date.

Our primary purpose was to build up a database of Indian materials. All document in whatever format - journal articles, books, conference papers, reports, thesis and dissertations - were to be covered. We proposed to focus our activities mainly on current literature, beginning from 1987. Articles in journals received in 1987 have been included in the database. In 1988, we have added books and conference proceedings as well. As far as thesis, dissertations and other unpublished reports are concerned, we propose to eventually cover retrospective materials as well. With this aim in view we have collected information about such materials in a number of organizations.

After considerable thought and debate, we chose to cover both learned and general documents. We hoped that the inclusion of the latter would make SUCHAK useful to a wider group of users, rather than limit its use to researchers. Moreover, we believed that such literature represented current, popular thinking on matter of immediate concern to society and often constituted source materials for research in areas such as Women's Studies and Sociology.

At present materials in English, Hindi, Marathi and Gujarati are being input and we hope to increase the number of languages covered in the future.

Our primary purpose has been to build up a database of Indian materials. However, considering the non-availability of computerized international databases on a commercial basis in Home Science and Women's Studies and the high cost of databases in Sociology and Library Science, we have included selective foreign materials - at least on a temporary basis - till arrangements to acquire or access them are finalized.

As of now, documents acquired in the various units of the S.N.D.T. Women's University Library System, other departmental collections and a few neighbouring libraries are being input. Efforts for increasing the resource base are being made. A number of libraries have expressed their desire to contribute materials and a few key libraries have accepted in principle to send entries. The modus operandi for this is being worked out so that there will be consistency both in bibliographic and subject descriptors.

Although we recognized the value of providing abstracts of documents to user groups, and would have like to be able to do so, looking at our own limitations of time and staff, we opted not to attempt to include abstracts. In order to provide maximum possible access, we used up to a maximum of 5 - 6 index terms in a documents per subject. The controlled vocabulary for Sociology and Women's Studies were drawn mainly from two thesauri: (1) Thesaurus of Sociological Indexing Terms and (2) A Women's Thesaurus.

However, slight modifications were made chiefly in opting for British spelling eg. 'labour' instead of 'labor' and adding a few terms for concepts/problems specific to Indian situations. For Home Science, we were unable to trace any thesaurus which covered the whole field. Selecting terms from thesauri in related fields (eg. Sociology), the subject heading of printed abstracting services (eg. Nutrition abstracts and reviews), various syllabi for different level courses, and subjects dictionaries we are identifying certain terms to be authorized.

Selective Dissemination of Information

About four months after we began regular entry to the SUCHAK database, we turned our attention to SDI. Understanding how SDI worked on MINISIS, familiarizing ourselves with its Syntax and developing the print format took us 2 - 3 weeks. We then began work on building up the two additional databases necessary for SDI viz. READERS (for names and addresses of users) and PROFILES (for their interest profiles). After initial testing with faculty and research workers at S.N.D.T., we have sent our requests for interest profiles from those interested in receiving the service. We propose initially to provide SDI four times a year.

Present Position

The SUCHAK database today - ten months after we began our first regular data entry - contains approximately 6500 records and is growing daily. We are increasing our resource base by adding new formats, and materials from other libraries. The SDI databases are coming into their own. Work on generating printed indexes to Indian materials is also going on.

Chinese Character Set

Coding Scheme

- Characters are represented in numbers
- An unique number is assgined to each character
- Many characters defined in Chinese character set
- Take more than one byte to represent a character
- Consists of alphabet, numbers, special characters and space character
- Version G supports three Coding Schemes

  GB2312 standard(PRC standard)
  Telegraph standard
  HP Taiwan standard(based on Telegraph standard with extension)

- Each hardware manufacture employ a coding scheme to represent Chinese characters
- MINISIS allows users to mix Chinese data and Latin data in a field, a record and a database.
- Chinese character string is prefixed with a Character Set Identification Code(CSIC).
- A CSIC is a two-byte string. Where the first byte contains a octal value of 16; the second byte contains a value between 0-15.
- The Chinese CSIC consists of %16 and %4. %4 is the Chinese character set number and is assigned by IDRC.

Character Set Attribute Table (CSAT)

- describe the general characteristics of all defined character sets
  . size of character code
  . width of a character in output
  etc

- Chinese character set is described in the fifth entry of this table

- it is a procedure which is stored in the MINISIS SL library

- This procedure is called ATTRIBUE'TABLE

- this procedure consists of number of attributes. Attributes can be changed by a MINISIS installation

- Sample CSAT(CSAT.LANCHIN.MINLIB) is provided in Version G.

Character Set Definition Procedure (CSD)

- this is a procedure which is resided in the MINISIS SL library. Initially, a dummy procedure is provided by IDRC

- it provides three functions to MINISIS
  . identifying the type of a Chinese character
  . upshifting a Chinese character string
  . replacing Chinese characters with sorting sequence number

- Version G supports three Coding schemes. Each coding scheme has its own CSD procedure.
  ie. CSD04.LANGCHIN.MINLIB for Telegraph standard
  CSD04GB.LANGCHIN.MINLIB for GB2312 standard
  CSD04ROC.LANGCHIN.MINLIB for HP Taiwan standard

- Sample proceudres can be changed by a user

- This procedure is called ATTR'CHARSET04

- It must be coded in System Programming Language(SPL).

I/O DEVICES

- MINISIS supports Chinese I/O in two ways.
  . software implementation
  . hardware implementation

- Software implementation. A grahics terminal is used and a Chinese character pattern file is maintained in HP3000.
  advantage: 1) support a large number of user-defined characters 2) support user-defined input methods
  disadvantage: 1) slow I/O 2) unable to work with HP subsystems(ie. VPLUS) 3) echoing on line base but not on character base 4) small display area

- Hardware implementation. A specialize terminal is needed. Chinese characters are permanently defined in ROMs. Limited number of user-defined characters could be supplied by users.

- Hardware implementation (continue)
  advantage: 1) fast I/O 2) able to work with HP subsystems 3) character is echoed when character is typed 4) screen is scrollable
  disadvantage: 1) fixed number of characters 2) fixed input methods

- both implementations are being used in PRC

HANDLERS

- They are procedures which sit between I/O devices and MINISIS.

- All data are passed through handlers if MINISIS'FREAD and MINISIS'FWRITE are called from application programs.

- IDRC provides 23 dummy handlers in the standard version of MINISIS.

- If a handler is required for your application then one of dummy handlers will be replaced with your handler.

- Version G supplies 3 sets of handlers. Each set handle a coding scheme. ie.

  Hander01-Handler09 for GB2312 standard
  Handler10-handler20 for Telegraph standard
  Handler01, Handler08 and Handler09 for HP Taiwan standard

typically, a handler perform the following functions:

. inserting Chinese CSIC
. removing Chinese CSIC
. mapping Chinese character codes between two coding schemes
. setting terminal in the requested mode

TERMINAL HANDLER TABLE

- It is an editor-compatible file and is called TERMHDLR.PUB
- It provides the mapping between I/O devices and handlers. It also indicates the capability of I/O devices and flags of I/O operations.
- Each device of HP3000 is assigned an unique logical device number.
- When a file is opened, MINISIS consults TERMHDLR.PUB to see whether a handler is linked to the file or not. The logical device number of the file is used as an argument to search against TERMHDLR.PUB.
- A logical device number of a file can be overrided by a JCW value.

The name of JCW must be the same as the name of file. ie.

```
:SETJCW JCLFILE=100  <-- $STDIN
:SETJCW SYSLIST=100  <-- $STDLIST
```

Two generic JCW names can be used to define a terminal and a line printer. TERMINAL is used for a terminal; PRINTER is used for a line printer. ie.

```
:SETJCW TERMINAL=100  <-- $STDIN and
                          $STDLIST
```


USER'OPENFILE

- this procedure is called if a hanlder is mapped to a file and the "OPEN" flag in TERMHDLR.PUB is elected.
- this procedure is activated after a file is opened.
- IDRC provides a dummy USER'OPENFILE in the standard version of MINISIS SL. It is up to the user to replace it with his own USER'OPENFILE.
- It consists of different routines. Each routine provide service to a handler.
- a USER'OPENFILE(CSCOP.LANGCHIN) is provided in the MINLIB account. It is used to set I/O devices in a mode that can support Chinese input/output and open Chinese I/O support files.

USER'CLOSEFILE

- this procedure is called if a hanlder is mapped to a file and the "CLOSE" flag in TERMHDLR.PUB is elected.

- this procedure is activated before a file is closed.

- IDRC provides a dummy USER'CLOSEFILE in the standard version of MINISIS SL. It is up to the user to replace it with his own USER'CLOSEFILE.

- It consists of different routines. Each routine provide service to a handler.

- a USER'CLOSEFILE(CSCOP.LANGCHIN) is provided in the MINLIB account. It is used to reset I/O devices to normal state and close Chinese I/O support files.

PRINTING

- Both Latin characters and Chinese characters can be mixed on the same line.

- The width of a Chinese character is two byte.

- Depending on the implementation of Chinese I/O, the height of a Chinese character is either one vertical line increment or two vertical line increment.

- MINISIS makes use of CSAT to ensure a Chinese character is not split between lines.

- I/O devices may supports multiple character sizes. However, MINISIS assumes all data are in the same size.

- Most of Chinese printers are Dot-matrix printers. HP3000 does not support Chinese laser printer. Chinese Laser printer is connected to a PC.

SORTING

- Chinese characters could be ordered in different ways(ie. Pinyin, Radical, Stroke count .. etc)

- MINISIS does not enforce a fixed sorting method. Each user define its own method.

- During sorting of Chinese character, Chinese characters are replaced with their sorting sequence numbers. this processing is done by ATTR'CHARSET04.

- ALTCHAR=YES has to be elected in the index specification because the original version of data string is replaced with sorting sequence numbers.

- keywords of inverted files are ordered in accordance with internal character codes. **(not sorting sequence number)**

- ATTR'CHARSET04 has a mapping table which is a procedure(CS'SORTABLE) in the MINISIS SL. CS'SORTBLE is extracted from CHINSORT and is created by LUTBLE.LANGCHIN.MINLIB.

- CHINSORT is a MPE file resided in the LANGCHIN group of MINLIB. It is maintained by SRTBLE.LANGCHIN.MINLIB.

- SRTBLE supports both Telegraph standard and GB2312 standard and provides variety of sorting methods.

- Both Telegraph standard and GB2312 standard sort Chinese characters in accordance with Pinyin; HP Taiwan standard sort Chinese characters in accordance with internal character codes.

KEYWORD EXTRACTION

- There are three standard types of extraction:

  Whole field extraction
  Term extraction
  Word extraction

- A Chinese word consist of one or more characters. Because no word separator is placed between Chinese words, it is very difficult to extract words from a Chinese string.

- By default, Chinese word extraction is treated as character extraction. Each Chinese character become a keyword.

- True Chinese word extraction could be achieved by writing an user-exit. (USER'GENKEY)

The exit may do contextual analysis and use a dictionary to separate words from a Chinese string.

NUMERIC DATA

- Numeral characters are included in the Chinese character set.

- The internal code range of numeral characters are defined in ATTR'CHARSET04. MINISIS needs to know the type of Chinese character when stripping numeral characters.

- numeral characters are used for display purpose but not for computation.

MINISIS System Manager
Space Management

A) What is waste space on the system?
- waste space is space occupied by information (programs or files) which are no longer in use.

B) Consequences
- use a lot of space on the system
- more difficult to manage the system
- disc space is more fragmented

C) Who and what generates wasted space?
- MPE
    - LOG files in PUB.SYS
    - Workfiles (Editor, TDP, ...)
    - Subsystems that are not used (MRJE, INP, SUPPORT, ...)
- MINISIS
    - temporary file (Wxxxxxx, Kxxxxxx)
    - user
        - HITFILE
        - INDEX output
        - QUERY output
        - old print formats
        - test databases
        - PURGE DB without KEEP=NO
        - ISO file on disc
        - TMASTER file on disc
        - master files created too large
        - LOG00 files
        - audit trail files
- USERS
    - create workfiles and leave them on the system
    - workfile of editors

D) What can we do?
- check for big files whose purpose we don't know
- purge, or store and purge, logfiles in PUB.SYS
- check for temporary files on the system. Normally, they area in the format ANNNNNNN, so try:
  :LISTF @#######.@.@,2
  purge them if they are more than a few days old.
- check for old hitfiles. They are more difficult to trace, but you can have a good idea with:
  :LISTF @DD.@.@,2
  do not forget to purge the file ?????? as well as the one with ??????DD. Check the file code.
- check for files that have not been accessed for a long time. LISTDIR5 is not practical for this, so, try:
  :STORE @.@.@;$NULL;SHOW=OFFLINE;DATE<=xx/xx/xx
- check for old databases that are not used anymore (DBLIST in DATADEF)
- if you purge a database, do not forget to use the option KEEP=NO, and to purge the inverted files.
- with VERIFY, check your database for the status of your Master and Xref files. This will tell you if your files have been created too big, of if you are beginning to reach the limit.

```
DATADEF VERSION F.02.00 SUN, AUG 23, 1987, 3:53 PM
TYPE 'HELP' FOR VALID COMMANDS
PLEASE SELECT FUNCTION
- verify sport
SORT ON N[AME], T[AG] OR M[NEMONIC] -
** HEADER INFORMATION **
DATA MODEL NAME - MODEL
DATABASE NAME - SPORT
DATA BASE CLASS - RD
DATA BASE TYPE - 03
FILE TYPE (MASTER/KSAM/ANY/THES) - MASTER
GROUP NAME - MINISIS
MASTER FILE NAME - MSPORT
XREF FILE NAME - XSPORT
DEFAULT QUERY FIELD TAG - 1004
AUTO-NUMBERING (Y/N) - Y
DEFAULT PRINT FORMAT FILENAME - PSPORT
LOGID NAME -
NAME OF EXIT FOR VALIDATION (MAX 8 CHAR) -

FIELD NAME - champs
MNEMONIC - CHAMPS
FIELD TAG - a000
OFFSET TO FIELD - -1
MAXIMUM LENGTH OF FIELD - 100
SUBFIELDED FIELD INDICATOR (Y/N) - Y

FIELD NAME - numero is
MNEMONIC - ISN
   |
   |
FIELD NAME - subject term
MNEMONIC - SUBT
FIELD TAG - A605
OFFSET TO FIELD - -1
MAXIMUM LENGTH OF FIELD - 100

NO. OF FIELD DEFINITIONS - 26
NO. OF EXTENDED DEFINITIONS - 7
LAST ISN IN DATABASE - 1271

NUMBER OF INVERTED FILES - 5
LIST OF INVERTED FILE NAMES:
A004                REG     A202     REG              A400     REG

NUMBER OF RECORDS IN MASTER FILE - 164
FILE LIMIT OF MASTER FILE - 696
NUMBER OF RECORDS IN XREF FILE - 1276
FILE LIMIT OF XREF FILE - 1600
PLEASE SELECT FUNCTION
- exit
```

-run GARBAGE on those files, this will give you 2 things:

a) your files will be organized more efficiently

b) you will save space by adjusting your file to your data

Before the GARBAGE:

- check inverted files with TREEMANT to see the status of your files. Just answer 'N' to the "Recover waste space" prompt. Take a look, and compare the number of directory records used with the number used. Maybe some adjustments can be made. Also, compare the EOF with the limit of the file.

```
GARBAGE COLLECTOR F.02.00 FRI, SEP 4, 1987, 2:15 PM

ENTER DATA BASE NAME OR EXIT - SPORT
ENTER OPTION (STORE/RESTORE/REORG) - REORG
ENTER SIZE OF MASTER FILE - 175
ENTER SIZE OF XREF FILE - 1400

*** TOTAL RECORDS STROED = 1267
*** TOTAL DELETED RECORDS = 1
*** TOTAL RECORDS RESTORED = 1267
*** LONGEST RECORD LENGTH = 1406
*** SHORTEST RECORD LENGTH = 167
*** AVERAGE RECORD LENGTH = 525
*** MAXIMUM NUMBER OF FIELDS PER RECORD = 21
*** MINIMUM NUMBER OF FIELDS PER RECORD = 9
*** AVERAGE NUMBER OF FIELDS PER RECORD = 16
```

FILENAME	CODE	LOGICAL RECORD					SPACE	
		SIZE	TYP	EOF	LIMIT	R/B	SECTORS	#X MX
MSPORT	2110	4096B	FA	164	698	1	10208	29 32
XSPORT	2120	10B	FA	1600	1600	128	60	12 14

After the GARBAGE:

FILENAME	CODE	LOGICAL RECORD					SPACE	
		SIZE	TYP	EOF	LIMIT	R/B	SECTORS	#X MX
MSPORT	2110	4096B	FA	164	175	1	2688	28 30
XSPORT	2120	10B	FA	1400	1400	128	60	12 12

```
INVERT VERSION F.02.03      SUN, AUG 23, 1987, 3:59 PM
INVERT,TREEMANT,LIST,UNIVERT OR EXIT -treemant
ENTER KEY FILENAME (4 CHAR) - s004
RECOVER WASTE SPACE (Y,[DELETE=Y/N]/N/AUTO,n,m) - n

MAXIMUM KEY LENGTH = 20
POTENTIAL NO. OF KEYS IN DIRECTORY = 6699
CURRENT NO. OF KEYS IN DIRECTORY = 2648
TOTAL DIRECTORY RECORDS = 87
TOTAL USED DIRECTORY RECORDS = 47
AVAILABLE POSTINGS RECORDS = 1980
USED POSTINGS RECORDS = 21
INVERT,TREEMANT,LIST,UNIVERT or EXIT - exit

INVERT VERSION F.02.03 SUN, AUG 23, 1987, 4:01 PM
ENTER KEY FILENAME (4 CHAR) - s004
RECOVER WASTE SPACE (Y[,DELETE=Y/N]/N/AUTO,n,m) - y,delete=y
INCREASE SIXE OF B-TREE FILE (Y/N) - n
```

E) Files on the HP3000

- how are files created on the HP3000?
  - the defaults are:

record block size	:	depends on the input
block size	:	1
format	:	Fixed for disc, Undefined elsewhere
carriage control	:	NOCCTL
flimit	:	1023 records
device	:	DISC for disc files

```
MAXIMUM KEY LENGTH = 20
POTENTIAL NO. OF KEYS IN DIRECTORY = 6699
CURRENT NO. OF KEYS IN DIRECTORY = 2648
TOTAL DIRECTORY RECORDS = 67
TOTAL USED DIRECTORY RECORDS = 47
AVAILABLE POSTINGS RECORDS = 1980
USED POSTINGS RECORDS = 21

CHANGE SIZE OF DIRECTORY AREA (Y/N) - y
NUMBER OF FREE DIRECTORY RECORDS AFTER REORG -
CHANGE SIZE OF POSTINGS AREA (Y/N) - y
NUMBER OF FREE POSTINGS RECORDS AFTER REORG - 10

                    SORT STATISTICS:
NUMBER OF RECORDS =                 2648
NUMBER OF INTERMEDIATE PASSES =     0
SPACE AVAILABLE (IN WORDS) =        19123
NUMBER OF COMPARES =        32235
NUMBER OF SCRATCHFILES IO'S =  636
CPU TIME (MINUTES) =                .29
ELAPSED TIME (MINUTES) =    .37

TOTAL USED POSTINGS RECORDS AFTER REORG = 21

INVERT,TREEMANT,LIST,UNIVERT or EXIT - exit
```

nb extents : 8 (1 initial)

- all this can be controlled when you build the file
  - REC=
  - CCTL
  - DISC

Utilities

Part of the FOS

- SPOOK5
  - allows you to look at an output ready to be printed
  - allows you to modify some characteristics of these outputs in the spooler (priority, number of copies, ldev)
  - you can copy the output into a normal disc file
  - you can store and restore output to/from tape

- FREE5
  - to display the map of free space on all your disc drives
  - verify that you have enough space before offline inversion

- VINIT
  - to display a space map of one or all of the disc drives
  - to display/modify the defective tracks
  - to condense space on a disc
  - to init a private volume
  - to format/initialise a disc or cartridge

- EDITOR
  - to edit ASCII text file

- FCOPY
  - to copy/compare files
  - to dump a file in ASCII, HEX, OCTAL (ISOCONV)
  - to convert a file from one format to the other:

ASCII → EBCDIC, EBCDIC → ASCII
be careful, check the conversion table (no binary)
- to modify the blocking factor of a file
- to selectively copy the file (SUBSET)

- LISTDIR5
  - to list the capability of the user/account/group
  - to list the security of a user/account/file
  - to list the physical address of a file
  - to list the password, lockword and creator of a file

- LISTLOG5
  - to print a formatted output of the MPE logfiles of the system

- LISTEQ5
  - to list the file equations currently active on your session
  - try to use the LISTEQ command
  - use the LISTFTEMP command for temporary files

- ASOCTABL5
  - configure or list the association table of remote spool printer

- DPAN5
  DumP ANalyser to format a memory dump on the printer

- MEMLOGAN / MEMTIMER
  - allow you to check the memory log file
  - allow you to change the interval of memory check

- SEGMENTER
  - allow you to create/modify SL file, and organize the segmentation of your programs

- KSAMUTIL
  - allow you to create/purge/verify/recover KSAM files
  - useful after a crash to reset MINISIS KSAM files

-SORT/MERGE
  - allow you to sort/merge files

- DISKEX5 **
  - allow you to peek and modify everywhere (SM required) on disc
  - can be selected by drive, sector, or filename

- PATCH **
  - allow you to patch segments in an object program

- SLPATCH **
  - allow you to patch a segment into an SL

- SADUTIL **
  - stand-alone program that will allow you, in a crash situation, to recover some of the files on disc, and send them to tape
  - can also be used to reset the COLDLOAD ID

- RECOVER **
  - will read tape generated by SADUTIL, and restore files on the system

** → → → **BE VERY CAREFUL WITH THESE PROGRAMS !!!**

SUPPORT and TELESUP accounts

- These accounts are Hewlett-Packard accounts, and are used by your CE
- Officially, they are not supported by HP
- If you don't have them on your system, ask your CE if he can install them
- Check the DOC group, all the documentation is there
- Also the group MPETOOLS
- Group PRV contains programs that are running in priviledge mode, so, be careful, read the instructions
- Some of the programs are also in the Contributed System Library of Interex

ALTPROG	→	to modify an object program
BULDACCT	→	generate file with account structure
CS8OUTIL	→	stat on your CS80 drives
EPTFIND5	→	list of entry points in a program
JANITOR	→	purge Kxxxxxxx files
LOGxxx	→	utilities for system logfiles
MAXCAP	→	change maxdata/capability of program
MOVEFILE	→	move/copy a set of files
SYSINFO	→	system configuration list
TAPEDIAG	→	tape utility
TAPESCAN	→	list of store tape
TDTCOPY	→	tape copy with 1 tape drive
TUNER	→	system tables usage display
VALIDATE	→	list/check of store tape
LISTFXX	→	list of file with date
SOO5	→	display of system usage and process running

Interex Contributed System Library

- Interex is the HP3000 international users' group
- Programs have been given by members for 10 years
- Each member receives a tape with new programs at least once a year
- Most of the TELESUP comes from here, and where given by HP people.
- Most popular programs:

SLEEPER	→	job scheduling program
PSCREEN	→	print screen on the line printer
MOO, SOOx	→	display processes active on the system
LOSTDISC	→	display disc usage
BLOCK	→	blocking factore for a file

Operations & Management

Backup

- kind of backup
  - backup of MPE with files: sysdump
  - backup of files only : store
  - those can be complete or selective
- frequency of backup depends on how critical your application is and how much you can afford to lose
- safest method is to do a full backup every day
- another method is a full backup with partial backup after
- where to keep the backup!
  - one copy should be in another building
  - tape/cartridge should be kept in conditioned environment

Startup of the system

- kind of start:
  - WARMSTART
    - everything is the same as when you shutdown the system

- if system is shut every night, do this in the morning
- COOLSTART
  - system tables are reset
  - jobs and output are lost
  - system configuration and MPE version come from the disc
- COLDSTART
  - system tables are reset
  - jobs and output are lost
  - system configuration and MPE come from tape
  - MPE is copied to disc
- RELOAD
  - everything on the system is lost
  - the configuration and MPE files are taken from tape
- the new SYSSTART file can make your life a lot easier when it comes time to start the system
- suggest that you do a COLDSTART at least once every 1,000 sessions or 2 weeks
- keep you COLDLOAD tape near, and generate a new one each time you change your configuration

Spool
- what is a spool?
- two kinds: input and output
- mainly used on the printer
- device classes
- if not spool, "hot"
- remote spool printer

Private Volume
- not part of the system domain
- has its own directory
- can be removed any time
- you can limit access to users
- OPERATOR/AUTOMATIC mount

System Logging
- is part of MPE
- you have control of this option
- what can be logged?

TYPE	EVENT
1	LOGGING ENABLED
2	JOB INITIATION
3	JOB TERMINATION
4	PROCESS TERMINATION
5	FILE CLOSED
6	SYSTEM SHUTDOWN
7	POWER FAIL
8	SPOOLING
9	LINE DISCONNECTION
10	LINE CLOSE
11	I/O ERROR
12	VOLUME MOUNT
13	VOLUME SET MOUNT
14	TAPE LABELS
15	CONSOLE
16	PROGRAM FILE EVENT
17	CALL PROGRESS SIGNALS
18	DCE PROVIDED INFO

Recover Lost Disc Space
- what caused some space to be lost
- try to do it from time to time
- recovery rate is 10 minutes/1,000 files
- every 3 months minimum

Vinit
- why condense?
- do at least once a month
- free space table
- run PVINIT in batch
- every month

Scheduling
- stream AT .....
- SLEEPER
- Jobs in the system HPTREND, CSMON, etc.

Terminal Connection
- minimum is pin 2, 3, and 7
- cable length can be more than 50 feet
- configuration of terminal
    - terminal type and sub-type

Crash, Failure and Recovery

- Hardware Crash
    - on which device?
    - if on CPU, tape drive, almost anything except disc drive, there should be no problem recovering the data
    - on a private volume, only this drive should have a problem, because it has its own directory
    - on a system disc, the chance of recovering the full system is very remote if it is a head crash, but recovery of specific files with SADUTIL may be possible. Normally, in this situation a RELOAD will have to be done
    - the worst scenario would be if the changes are in one pack, because each extent (of your files) is spread acorss the packs (depending on your configuration)
    - if you have a service contract, contact HP
    - do you have a service contract?
    - what are your relations with HP?
    - if electricity is a problem, have you been investigating surge suppressors and voltage regulators?

- Software Failure
    - first, try to figure out what the message means (this is not always easy)

```
**** SYSTEM FAILURE #3
STATUS %100026
DELTA-P %003563
HALT 15
-
```

    - copy this message into the system log book
    - if HP has asked, do a memory dump on tape
    - try a warmstart
    - print or store your spoolfiles
    - take note of all the jobs waiting
    - purge spoolfiles and jobs waiting (else, space is lost)
    - shutdown the system
    - do a COLDSTART with your tape
    - recover your KSAM files with KSAMUTIL
    - check all the last transactions that were entered or modified
    - it is a good idea to keep the log book up to date
    - special case
        - if you have a failure when you are starting the system (during the 6 steps they tell you not to interupt)
        - if you try to restart, it will tell you that the COLDID is not OK. To recover this, start the system with the DUS tape, and run SADUTIL, there is a new option that will allow you to reset all the COLDID in the system.
        - do a reload

USING MINISIS TO PROCESS MALAYSIAN MARC DATA: UNIVERSITI SAINS MALAYSIA LIBRARY'S EXPERIENCE WITH THE MINISIS-UNIMARC INTERFACE

by

Lim Huck-Tee
Chief Librarian
Universiti Sains Malaysia

and

Pang Siam-Choong
Assistant Librarian
Universiti Sains Malaysia

INTRODUCTION

The Universiti Sains Malaysia (USM) Library was the developer of the MALMARC (Malaysian MARC) system, a centralized cataloguing system, established in 1978. This is the national computerized cataloguing system which has as its principal participants all but one of the Malaysian university libraries and their branches, the National Library of Malaysia, and the Nanyang Technological Institute in Singapore. The system is used to retrieve records from the Library of Congress and UK MARC tapes as well as to create original records for cataloguing purposes. It maintains, updates and produces (in COMfiche) the national union catalogue and the individual catalogues of the participating libraries and their branches. It is also used to maintain and produce the quarterly Bibliografi Negara Malaysia (Malaysian National Bibliography) as well as the National Union List of Serials known as PERPUNET. Individual databases of the participating libraries range from about 18,000 records to over 200,000 records. In the past few years, the total number of records processed annually have exceeded 70,000 records. At the end of 1987, the databases created by the MALMARC system consisted of the following:

Union catalogue database	401,536 records
National union list of serials	18,450 records
Bibliografi Negara Malaysia	15,723

In addition, the system has access to 1.5 million LC MARC records and 1 million UK MARC records.

The existence of these large databases has resulted in frequent requests by libraries in Malaysia for outputs on various

topics, such as the Japanese Occupation in Malaysia, scientific and technical books published in Bahasa Malaysia (Malaysia's national language), Women in Malaysia, Islam in Malaysia, all works relating to a particular state or region in Malaysia and so on. However, since MALMARC is a batch processing system, its retrieval capability is very poor, being based on sequential searching. This has frequently proven to be both inefficient, time-consuming and expensive. Furthermore, because of the need to save computer processing time, the search profiles have tended to be less precise and comprehensive than would be considered desirable.

For many years we have looked into the possibility of acquiring an efficient information storage and retrieval package which would help to facilitate access to the MALMARC databases. Consequently, when the School of Mathematics and Computer Science decided in 1987 that they had no further use of an old minicomputer, the HP3000 series 30, the Library requested that the machine be donated to it. The hardware configuration is as follows:

HP3000 series 30 (model 324-31B)
Tape drive model HP7970E, 1600 b.p.i.
4 Terminals (HP2622A)
2 disk drives (50 Mb & 120 Mb)
Main Memory - 1 Mb
1 dot matrix printer model 2608A

The acquisition of this minicomputer has made it possible for the Library to use the powerful MINISIS software package. This package was acquired and installed with IDRC's help in late 1987, and steps were immediately taken to load the MALMARC data into MINISIS for experimental purposes. We are still relatively new and inexperienced in our use of the software, as MINISIS is a complex system and the learning curve is a steep and long one. Currently, the software is used for two purposes:

* To dump[1] the MALMARC databases into the MINISIS system for more efficient retrieval of the MALMARC records.

* To move data between MINISIS and CDS/ISIS (micro version) databases.

Because the HP 3000 computer is very old, and because of problems with the air-conditioning system, we have experienced frequent breakdowns which have affected our progress with the use of the MINISIS system. Our primary interest currently is in using

---

1. In MINISIS jargon, the term dump is used to mean importing data from an external file, while load is used to mean exporting data from a MINISIS database to an external file

the MINISIS-UNIMARC interface to dump MALMARC records into a MINISIS database for retrieval purposes.

The rest of this paper will be concerned with the theoretical basis for the development of the MINISIS-UNIMARC Interface, and the experience of the USM Library in using this interface.

INCOMPATIBILITIES BETWEEN MINISIS FORMAT AND UNIMARC

The increasing use of MINISIS by libraries, especially those in the developing countries, has led to a clamour for IDRC to enhance MINISIS so that it can also handle MARC records for cataloguing and exchange purposes. The major problem is that MINISIS was not designed to support MARC type formats, although MINISIS can support the loading and dumping of records in ISO-2709 format.

In 1982, IFLA in collaboration with IDRC obtained funding for a study by Ms. Elaine Woods[2] to identify the problems associated with the implementing of UNIMARC using MINISIS. As a result of the study, IDRC undertook the necessary enhancements to the MINISIS software to enable it to process UNIMARC records.

Ms. Woods identified many of the incompatibilities that made it difficult for MINISIS to handle UNIMARC data. Among these were the following:

* MINISIS does not allow users to access the information in the leader.

* Each MINISIS database is limited to 256 fields, whereas UNIMARC's theoretical limit is 1,000 fields. In reality, however, this limitation is not a serious one since UNIMARC and most national MARC formats do not even use more than 200 fields.

* UNIMARC subfields are repeatable, but MINISIS subfields are not.

* Unlike UNIMARC (which allows more than 9 subfields per field), MINISIS can only handle a maximum of nine subfields in each subfielded field. This is largely due to the way in which data are structured and stored in MINISIS. Like UNIMARC, each MINISIS field is identified by a tag. However, unlike UNIMARC which uses a 3-digit numeric tag (e.g. 100, 450), MINISIS uses a tag comprising a three digit numeral prefixed by an alpha

---

2. Woods, Elaine. Report on MINISIS/UNIMARC study. Nov. 1983

character (A to Z except Y). Examples of a typical MINISIS tag: B010, Q140, P120. All MINISIS fields are of two types: fields without subfields called elementary fields, and fields which are subfielded known as group fields. Both elementary and group fields have tags which must end with a zero. However, the subfields found in a MINISIS group field can be recognized from the fact that they have tags in which the letter and first two digits match the group field tag. For example:

```
A100 - Group field          B010 - Elementary field
A101 -+                           [no subfields]
A102  |
A103  |
A104  |
A105  |--- subfields
A106  |
A107  |
A108  |
A109 -+
```

* It is clear from the above that UNIMARC subfields are different from MINISIS subfields. UNIMARC subfields are embedded within a field using subfield delimiters (such as $a, $b, etc.), while MINISIS subfields have their own tags.

* MINISIS does not use indicators. In UNIMARC indicators are important because they are used to qualify the data in the fields where they are used, or for print control.

* Since all MINISIS fields are considered to be of variable length, it is not possible for MINISIS to process a particular field where the data are stored and recognized by their fixed position in a field. In UNIMARC, 1XX is used to store coded information in fixed fields, as for example in field 105 Coded Data Field:Books. In this field all data elements entered in subfield $a are identified by their character position within that subfield. For example:

105␣␣$abf␣␣a␣␣␣001yb

Key: ␣ = blank

In UNIMARC the codes have the following meaning:

Character Position	Value	Notes

0-3	bf⍽⍽	Item contains maps,plates
4-7	a⍽⍽⍽	Item contains a bibliography
8	0	Not a conference publication
9	0	Not a festschrift
10	1	Item has an index
11	y	Not a literary text
12	b	Individual bibliography

MINISIS would not be able to process such fixed field data but would treat the data as a string of characters, with word divisions indicated by the blanks.

* Because of the differences indicated above, MINISIS would have to solve problems encountered in processing UNIMARC fixed fields and fields which contain embedded subfield delimiters. The problems that need to be solved would include how to display and sort such fields, and how to generate search keys from such fields for fast access.

POSSIBLE APPROACHES

There are two basic strategies that IDRC could have taken to provide an interface between MINISIS and UNIMARC. The first approach may be called the external interface, and the second the internal interface.

External Interface. In this approach, the MINISIS system would continue to process data using its own internal processing format. However, a conversion program is written which would allow imported data in UNIMARC format to be converted into the internal processing format of MINISIS. A similar conversion program would have to be written to convert data from the internal format into UNIMARC format for export. This is of course easier said than done. Some data would be loss during the import and export processes, because of basic incompatibilities between MINISIS and UNIMARC formats. For example, when importing data from UNIMARC, the indicators would have to be stripped before the data can be loaded into MINISIS for processing; the subfield delimiters would also have to be converted to the equivalent MINISIS subfield tags. There would however be a problem if a particular subfield in UNIMARC is repeated. A possible solution would be to substitute the repeating subfield with an appropriate punctuation mark. For example, the following UNIMARC field:

606⍽⍽$aRadiation$xMeasurement$xLaboratory manuals

could be converted to MINISIS as follows:

G601Radiation
G602Measurement - Laboratory manuals

Generally speaking, format conversion would not be a problem if a one-to-one conversion between the different uses of tags, indicators and subfield codes can be established. However, problems arise when the correspondence is one-to-many. In such a situation, it would be necessary to arbitrate beforehand which of the many alternatives to choose, although this could lead to some loss of information. A many-to-one correspondence is relatively straightforward. Again there would be some loss of information in the sense that full conversion is not possible both ways.

Internal Interface. The second strategy, which was the one selected by IDRC, would be to dump the data as it appears in a UNIMARC field, and extend the capability of MINISIS to process MARC records - which means, in essence, the capability to handle indicators, subfield delimiters and fixed fields.

It is interesting to note how IDRC overcame the problems caused by the fixed fields and subfield delimiters in UNIMARC. Essentially, what MINISIS does is to store all the MARC field data whether fixed or variable (which need special processing using User Exits) in MINISIS elementary fields, i.e. fields which have tags ending in a zero. For example, a UNIMARC fixed field such as the following:

105␣␣$abf␣␣a␣␣␣001yb

would be stored in an equivalent MINISIS field as follows:

C130␣␣$abf␣␣a␣␣␣001yb

In the same way, a UNIMARC variable field such as the following:

2001␣␣$aIndustrial steam locomotives of Germany and Austria$d=Damfloks auf Industriebahnen der BRD, DDR, und Osterreich$fcompiled by Brian Rumway$gGerman translation by M. Spellan$zger

would be stored in the equivalent MINISIS field as follows:

D1001␣␣$aIndustrial steam locomotives of Germany and Austria$d=Damfloks auf Industriebahnen der BRD, DDR, und Osterreich$fcompiled by Brian Rumway$gGerman translation by M. Spellan$zger

Specially written User Exits or groups of programs are then employed to process the records in a special way using the normal MINISIS processors and utilities, such as PRINT, ENTRY/MODIFY, INDEX and INVERT.

At the same time, IDRC has modified ISOCONV to permit the dumping of information from the leader of an ISO file into specific fields in the MINISIS database, e.g. Record status (L050), Type of record (L060), Encoding Level (L170). IDRC has also modified ISOCONV to make it possible to load information from specific fields in a MINISIS database into the leader when creating an ISO-2709 record using that utility.

EFFECTS ON MINISIS PROCESSORS

There are a number of differences in the way the MINISIS processors and utilities are used when processing MARC type records as distinct from typical MINISIS records. It is not possible to describe in detail all the possible changes, differences or design considerations needed to manipulate a MINISIS database holding MARC records. Nor would such a description be fruitful. A more useful approach would be to describe Universiti Sains Malaysia Library's experience with processing the MALMARC records in MINISIS, and to indicate some of the differences at appropriate points.

THE MALMARC FORMAT

Although the MINISIS-UNIMARC interface was designed specifically to handle records in the UNIMARC format, the interface can in fact be used to handle records which conform broadly to MARC format specifications. Since the MALMARC (Malaysian MARC) format is based largely on the LC and UK MARC formats with some local modifications, we were confident that we would not encounter any problems in using the Interface. This viewpoint subsequently turned out to be correct, as none of the problems encountered were format related.

PROCESSING MALMARC DATA

To process the MALMARC records within MINISIS, it was necessary for us to:

1) Create a Relation Definition (RD)[3] called UNIMAL using

---

3. It is not the intention to discuss in detail the structure of a MINISIS database. In simplified terms, there are four kinds of logical database structures used in MINISIS. The simplest is the RD (Relation Definition) which corresponds roughly to the primary or master data file. The PS (or Project Subset) is essentially a subset of the records in a RD, or a subset of the fields within a record. The DS (or Data Submodel) is formed by combining two or more databases using JOIN rules. Finally CD (or Correspondence Definition) represents a mapping between the tags in a MINISIS database and an external ISO file.

the MINISIS processor DATADEF;

2) create a Correspondence Definitions (CD) database called CDUNI (See footnote 3);

3) convert the MALMARC records into ISO-2709 format for dumping from tape directly into UNIMAL;

4) define the MARC Table parameters.

The sub-sections below describe the various procedures involved in greater detail.

Creating the UNIMAL Database

There are some basic differences involved in creating a "normal" MINISIS database and one which is designed to hold MARC records. In designing a database for use with the MINISIS-UNIMARC interface, the following points should be noted:

* The UNIMAL RD header record must include the name of the MARC Table parameter file.

* In order to include the MARC leader information in the MINISIS database, it is necessary to use certain special fields. These fields have the following mandatory tags and mnemonic names:

Leader Information	Tag	Mnemonic name
Record Status	L050	RST
Type of Record	L060	TOR
Bibliographic Level	L070	BIL
Hierarchical Level	L080	HIL
Encoding Level	L170	ECL
Record Label	L180	RLB

* Elementary fields are usually used to hold MARC subfielded fields. However, where a MARC subfielded field does not contain repeating subfields, or does not have more than 9 subfields, it is possible to define appropriate MINISIS subfields to hold the MARC subfielded data. Take for example the UNIMARC field 207 (Serials: Numbering). This field has only 2 subfields. This UNIMARC field can be stored as one MINISIS elementary field:

```
D140 ␣0$aVol.1,no.1$zBUCOP
```

or as two MINISIS subfields:

```
D141 Vol.1,no.1
D142 BUCOP
```

* Fixed fields pose a different set of problems. Firstly, the length of a MINISIS field holding fixed field data must take into account not only the number of characters in the fixed field data but also any indicators and subfield delimiters. Secondly, the special User Exit called MARCINP must be specified at the time of data definition. This Exit will use the parameters in the MARC Table to prompt for each fixed field data element as well as place each element in its correct position during data entry.

* If a field or subfield is to be inverted special attention should be given to the inversion parameters. For example, if it is intended that a User Exit such as GEN'KEY is to be used to invert a field containing MARC subfielded data, a value of 1 should be supplied when replying to the prompt "FUNCTION CODE OF USER DEFINED EXTRACTION ROUTINE".

The UNIMAL database definition is attached as Appendix I. This database was created to accept MALMARC records, using the principles enunciated above.

Creating CDUNI, the CD database

Before the MALMARC data could be dumped into a MINISIS database it was necessary for us to create Correspondence Definitions between MALMARC tags and MINISIS tags. These Correspondence Definitions were then used by the ISOCONV utility to convert the MALMARC records into a format suitable for dumping into the UNIMAL database. In Appendix II is included the Correspondence Definitions database (CDUNI) which we created.

Converting MALMARC Records into ISO-2709 Format

The MALMARC system runs on the Universiti Sains Malaysia's IBM 4381 mainframe. Except for currently processed records, all the MALMARC records are stored on magnetic tapes in MALMARC format. The records are of variable length, have a logical length of 2996 bytes, and are stored in physical blocks of 3000 bytes. However, the ISO format as recognized by MINISIS has a block size of 2048 bytes. Before the MALMARC records could be dumped into MINISIS, a conversion program had to be written to convert the MALMARC format into the ISO format recognized by MINISIS.

Basically the program converts the data from EBCDIC into ASCII, and stores MALMARC records in blocks of 2048 characters. If the length of a MALMARC record is less than 2048 bytes, the program inserts blanks at the end of the block. However, if a MALMARC record exceeds 2048 bytes, the extra bytes are copied over to the next block. Since no MALMARC record has a logical length greater than 2996, this in effect means that no record

takes up more than two blocks of an ISO formatted record. In addition, the program moves the control number (which in a MALMARC record is stored in the leader field) to tag 012 in the ISO record.

Having created a tape containing about 1,000 MALMARC records in ISO format, we had now to dump the records into the UNIMAL database. This was a fairly simple process, as it only involved issuing the following commands:

```
:FILE T;DEV=TAPE
:RUN ISOCONV.PUB.MINISIS;LIB=P
>DUMP FROM=CDUNI,TO=UNIMAL
>SUBSET=ALL
```

Creating the MARC Table

The MARC Table is really the cornerstone on which the MINISIS-UNIMARC interface is built. It is a parameter file whose primary purpose is to provide the information needed by the various User Exits to process specific subfields and fixed fields.

The MARC Table is really an ASCII text file (or what IDRC calls an Editor compatible MPE file) containing a number of records. Each record (or line) in the MARC Table contains processing information either about a MARC fixed field or a MARC subfield. Each record is 255 characters in length, and the data elements have positional significance. Details of the parameters in a MARC Table record are provided in Appendix III.

Because of the difficulty of creating a file in which every data element has to be accurately placed in its correct position in each 255-character record, IDRC has made it possible for a RD database to be created in order to facilitate the data entry of the parameters for each fixed field or subfield element. A batch file called JOUTFL is then run to convert this RD database into a disc file that can be accessed by the User Exits.

The User Exits use the parameters stored in the MARC Table file to process the records stored in UNIMAL database in the following ways:

* The data elements in a fixed field can be input and modified through a series of user friendly prompts.

* Data in a subfielded field can be displayed in three ways:
  - with indicators and subfield delimiters displayed;
  - with indicators and subfield delimiters removed;
  - with appropriate strings or punctuation marks substituted for subfield delimiters.

* Records can be sorted on the contents of an entire subfielded field but ignoring the subfield identifiers.

* Records can be sorted using indicators to ignore a certain number of characters at the beginning of a field.

* Inverted files can be created either using the whole subfield or individual keywords extracted from the subfield.

Appendix IV shows the MARC Table file that we created to process the MALMARC records.

USING THE MINISIS PROCESSORS

Once the above steps have been taken, it would be possible to use the various MINISIS processors to manipulate the MARC data stored in UNIMAL. In this paper, we have concentrated only on using the following processors: PRINT, INDEX, INVERT, ENTRY.

The PRINT Processor

Defining a print format which can handle MARC-type data is a fairly straightforward process. There is no difference between a "normal" MINISIS database and a database containing MARC data when it comes to defining the page level specifications, which include parameters such as the number of characters per line, the number of lines per page, the left and right margin widths and so on. However, when specifying the parameters at the record-level, it is necessary to be aware that the MARC fixed fields and subfields may need special treatment.

The standard MINISIS PRINT processor can be used to display MARC subfields. But this would mean that the subfields are displayed with indicators, subfield delimiters and data as one continuous string of characters. The MINISIS-UNIMARC interface includes a User Exit called USER'DISPLAY, which is used to call the routine MARCPRNT'FUNC1 to print or display the MARC subfields. How the subfielded fields are displayed or printed is dependent on the function code value that is entered into the record-level specification of a MARC subfielded field, when the Print format is defined. For example, function code 1 will display MARC records with subfield delimiters replaced by character strings or punctuation marks defined in the MARC Table, while function code 4 will display records with the indicators and subfield delimiters, but with all slashes (/) which may be used for term processing removed.

Example of a MARC Record
Stored in the UNIMAL Database

```
ISN=1
L050 RST     :X
L060 TOR     :
L070 BIL     :
L080 HIL     :
L170 ECL     :
L180 RLB     :
A080 PRNCOD  : 00$a016871119s19591964us              0      engh
A120 CONTRL  : 00$aLC59010068
A200 ISBN    : 00$a0691005699
A500 LCCALL  : 00$aD295.P175
B000 PNAME   : 10$aPalmer$hR. H$qRobert Roswell$c1909-
C450 TITLE   : 14$aThe age of the democratic revolution$ba
political  history of Europe and America, 1760-1800$cRobert
Roswell Palmer
C600 PAREA   : 00$aPrinceton, N.J.$bPrinceton University
Press$c1959-1964
D000 PHYSDE  : 00$a2v.$c25cm
G500 TOPHDG  : 00$aConstitutional history
G510 GEONAM  : 00$aEurope$xPolitics and government$y18th century
H450 ADDTTL  : 04$aThe democratic revolution
```

Example of the Same Record
Displayed using Function Code 1

```
Palmer, R. H, 1909-
    The age of the democratic revolution: a
    political history of Europe and America, 1760-1800
    / Roswell Palmer .- Princeton, N.J.: Princeton
    University Press, 1959-1964.
      CALL NUMBER: D295.P175
```

Fixed field data elements can also be displayed as a string of characters by using the normal PRINT processor. However, it is also possible to display each fixed field data element separately by entering appropriate values in response to the prompts DISPLACEMENT INTO THE FIELD and MAXIMUM NUMBER OF CHARACTERS for each fixed field data element. For example, if a MINISIS tag B050 contains the following data from the UNIMARC field 105 (Coded Data Field: Books)

B050␣␣$abf␣␣a␣␣␣001yb

entering the value of 4 in answering the prompt DISPLACEMENT INTO THE FIELD and 4 in response to the prompt MAXIMUM NUMBER OF CHARACTERS will cause the following codes to be displayed:

bf

If appropriate literals were added, the fixed field data elements could be displayed as:

Illustration Codes: bf

By similarly defining other fixed field data elements, it would be possible to display all the fixed field data elements separately and meaningfully.

The INDEX Processor

The INDEX processor is used to produce sorted output using up to five sort keys. Sort key generation can be of the following types:

* Term processing, i.e. any string of characters between two slashes (/)

* Word processing, i.e. any string of characters delimited by blanks

* KWIC index

* Processing an entire subfield

The keys generated by INDEX are stored in an output file, which is used as an input file to drive various processors and utilities such as PRINT and INVERT.

When INDEX is used to generate sort keys from MARC fields in MINISIS, it makes use of various User Exits, such as MARCINDX'FUNC1, MARCINDX'FUNC2 and GENKEY'FUNC1. These Exits are driven by the parameters in the MARC Table to generate sort keys from appropriate subfields.

The INVERT Utility

The INVERT utility works with the INDEX processor to produce inverted files which can be used to access records in MINISIS. Although MINISIS allows online inversion, we decided to invert off-line. Again inversion of a MARC subfield was determined by the parameters specified in the MARC Table and at the time of data definition when a value of 1 was entered in response to the query FUNCTION CODE OF USER-DEFINED EXTRACTION ROUTINE.

To create an inverted file from MARC records, it is necessary to carry out the following tasks:

* At data definition, flag the field which should be inverted.

* Enter a value of 1 in response to the prompt FUNCTION CODE OF USER-DEFINED EXTRACTION ROUTINE.

* Specify the length of the key, the stripping parameters and the name of the inverted file.

* Include appropriate values in the MARC Table for each subfield to be inverted so that the USER'GENKEY exit can be called to process the subfield as required.

DATA ENTRY

The DATA ENTRY processor behaves "normally" with respect to fields which do not require to be processed by MARC exits. However, for MARC fixed fields special handling may be required.

For fixed field processing, the following steps have to be taken:

* During database definition, enter Y when responding to the prompts EXTENDED DEFINITION, SPECIAL USER EXIT and FIELD PROMPTING CONTROLLED BY EXIT. Enter MARCINP when asked for the NAME OF EXIT.

* Appropriate values should be entered in the MARC Table parameter file relating to fixed fields. This will ensure that during data entry, fixed field data elements will be prompted for in the order in which they appear in the MARC Table.

In DATA ENTRY, MARC subfielded fields do not make use of special exits. Consequently, all the subfielded data together with the indicators and subfield delimiters must be entered as one continuous string in a MINISIS elementary field.

CONCLUDING REMARKS

As can be seen from the above discussion, manipulating MARC data within MINISIS requires very complex processing, and careful attention to very minute details. Because of linkages between the various processors and the MARC Table, and because of the need to define all the parameters very carefully, it is quite easy to make errors which will result in unpredictable outputs.

Essentially, the MINISIS-UNIMARC interface is a compromise between two incompatible formats. Elaine Woods has pointed out that the interface is intended primarily to be "a means of moving to and from MARC-based formats".[4] We do not entirely agree with her assessment, for we think that it can do more than that. Our experience with the interface (albeit limited) has shown that the enhancements provided by IDRC appear to be very effective. It is true that the indicators within MINISIS cannot be used for sophisticated print control; it is also true that fixed fields can only have subfielded delimiters at the beginning of the field, and that repeatable subfields can only be recognized if they are entered as a string of data (with embedded subfield identifiers) within a MINISIS elementary field. Nevertheless, once all the parameters have been properly defined, the MARC records can be manipulated almost as easily by the ENTRY, PRINT and QUERY processors as the records in a standard MINISIS database. For dumping and loading records to and from external files, the ISOCONV processor is more than adequate.

The limitations of the interface are clearly recognized by IDRC as the following statement taken from the MINISIS-UNIMARC Interface documentation shows:

> "Although it is not possible to use MINISIS to produce... the fullest possible UNIMARC record, tests indicate that users who are willing to forgo fields of peripheral value to their application will be able to produce a useful and quite full UNIMARC record via the MINISIS processors and UNIMARC exits." (p.6)

---

4. Woods, Elaine W. The MINISIS/UNIMARC Project; Final Report. (London: IFLA UBCIMP, 1988) p.4

PUBLISHING MINISIS REPORTS USING A TRILINGUAL LASER PUBLISHER SYSTEM

In English, French, and Arabic
(with special emphasis on Arabic)
(work in progress)

INTRODUCTION

This paper reports on work in progress to interface MINISIS with a Laser Publisher package capable of processing and print text in English, French, and Arabic, and thus allowing the MINISIS user to produce typographically high quality reports, listings, etc. by simply processing their files through a PC connected to a Laser printer. Previously, the production of such reports would have been possible through the use of external printshops, or through an interface to traditional typesetters.

The Laser Publisher software package is a computer software product for the IBM personal computers and systems and true compatibles. It can perform functions equivalent to the traditional task of typesetting: that is, the formatting and arrangement of text using the page layout, font types, styles, etc. selected by the user. This is achieved through the use of a powerful set of "tag" instructions which can be inserted at appropriate locations in the text file by the user. This file is then processed and output onto a Laser printer. The output from the Laser printer is a high-quality hard copy of the text, in the format and layout specified by the "tags" inserted by the user in the original text file. This hard copy is "camera ready"; that is, suitable for direct distribution (small production runs) or direct reproduction by conventional photo-offset printing methods. Since the hardware required by the publishing software will fit easily on the top of a desk, such a system will be termed a desktop publishing system.

Bilingual (Arabic/Latin) desktop publishing systems are relatively new, with two different solutions to the Arabic speaking markets being offered, one based on the Apple Macintosh and the other is MS DOS based. Both solutions have strengths and weaknesses, and are continuously being enhanced by the software manufacturers. Since a major objective of publishing text is to be able to communicate ideas as persuasively, and as effectively as possible, the quality of the text composition of a particular software program becomes vital in assessing its suitability. It is interesting to note that in order to produce high quality text in Arabic, basic changes to the algorithms used for composition in Latin text have to be performed. The classical problem of Hyphenation and Justification (H&J) often considered for Latin text is replaced in Arabic by the problems of Extenders and Justification (E&J) since hyphenation is not allowed in Arabic writing. Instead, the Arabic characters are extended to fill in the unwanted blanks in a justified line. In fact since the requirement is for bilingual text, both the H&J and the E&J problems have to be considered in details in a bilingual publishing package. While there exist various well examined approaches to the problem of H&J, no published work has been produced on the problem of E&J.

Data Base publishing has been of interest to many users of MINISIS. Recently, the use of desktop publishing systems has been receiving serious attention from both the data base users and the publishing software manufacturers. Of the problems often encountered in this case are the interpretations of the records/fields data formats coming from the data base, and the filtering of this data in a way acceptable to the desktop publishing software. Added to that the various factors needed to be administered when dealing with multilingual data bases. These, and other issues lead to the requirement of the development of an integrated software interface unit that interconnects the data base files and the publishing software. Such a unit will typically consist of two parts; one residing on the host computer housing the data base, and the other on the PC end.

The following sections present an overview of the Publisher features, the software interface unit between

MINISIS and the publisher, and sample outputs of a typical MINISIS file obtained by using the publisher.

THE LASER PUBLISHER SOFTWARE

The publisher software selected for the MINISIS interface is the "ArabScript Professional Publisher". It is an MS DOS based program that can appeal for both the novice and sophisticated users. The novice, or casual user, with little knowledge of typesetting techniques, can utilise only the basic instruction sets of the program to generate documents of professional appearance in a variety of single and multi column layouts and formats. In the hands of a more knowledgeable user, the program is capable of producing work equivalent to the conventional typesetting, as found in books and magazines of high quality. The program is capable of processing English, French, and Arabic text or any bilingual combination of the three, and supports the Hewlett Packard LaserJet plus and LaserJet II printers in addition to postscript devices (Laser printers and image typesetters).

Of the features that are available in the program are:
Multi columns - Column width and gutter
Multi font types, sizes, and styles
Various units of measurements (in, cm, picas, points, dots, etc.)
Paragraph widow and orphan elimination
Left, Right, Center, and full justify
Aesthetic Rag
Automatic justifaction of Arabic text with extenders
WYSIWYG screen preview
Style sheets
Baseline jumps (superscript, subscript)
Kerning, Tracking, and Expansion
Page Layout overrides
Arabic ligatures support
Vertical and Horizontal tabs
Interline and interparagraph spacing

The program supports a wide selection of softfonts for the Hewlett Packard Lasers both in Latin and Arabic. A more detailed description of the software can be obtained from BYTE, the software manufacturer.

THE MINISIS/PUBLISHER INTERFACE

The development of an interface unit between MINISIS and the Publishing Software should be guided by the needs of the MINISIS users. To be attractive to MINISIS users, the interface should be as simple to use as possible, with most commands and processing handled automatically, without user intervention. However, the possibility must also be allowed for operator intervention, especially at the publisher level, to make formatting changes, or data changes resulting form an editorial process.

Two different types of uses are envisaged. MINISIS output could be printed on the Laser printer to provide camera-ready copy for printed publications, such as accession lists, current awareness bulletins, lists of current legislation and so on. The second type of use would be the printing from MINISIS data base reports which are not for publication, but rather for distribution to high-ranking officials. These kinds of reports are more frequent, and though the number of copies distributed may not be large, the importance of this output format to the continued operation and growth of the database center is apparent.

The two types of uses correspond to two different users. One user is the person familiar with the publisher, working on a PC attached to a Laser printer. In this case the link to the HP/3000 is used to download the data files for publishing purposes. The other user is someone connected, via a terminal or PC, to the HP/3000, who will print most search results or listings on a system line printer, but also wants the capability of directing output to the Laser publisher to utilise the advantages of printing proportionally spaced text with multiple font types, sizes, and styles.

In building the interface between MINISIS and the Laser publisher, the following main issues have been considered especially in the context of using MINISIS Data Bases that are a bilingual combination of English, French, and Arabic:

The development of a special terminal handler for the publisher.
The embedding of Publisher tags within the MINISIS records.
Design of style sheets along generally accepted report formats.
The preparation of the print file to be transferred to the PC.
File transfer/communications with the PC.
The Filtering and Publishing of the document.

A special terminal handler for the MINISIS/Publisher interface has been developed. This handler must be catalogued in the MINISIS SL, and an entry placed in the TERMHDLR file.

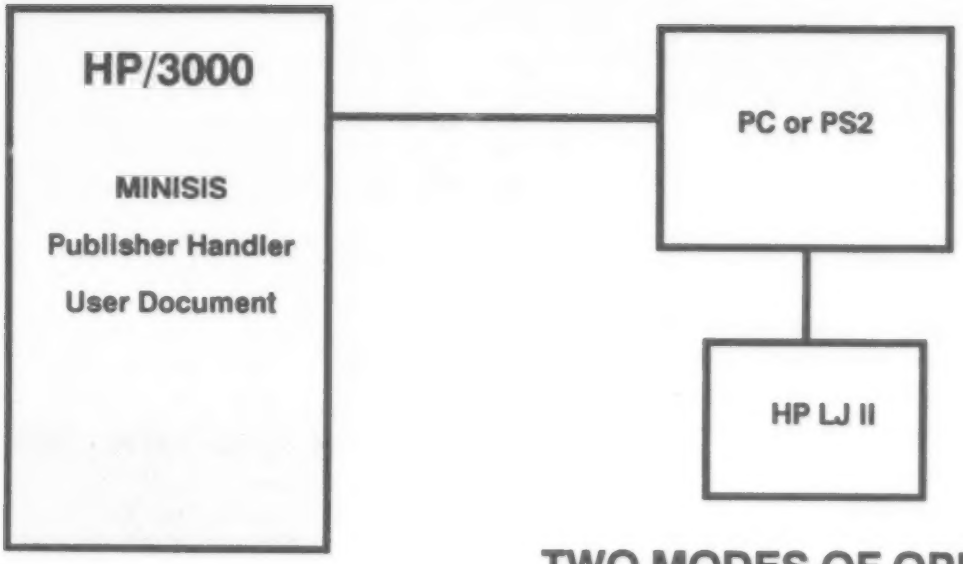
The print format is created by the end user in the same way as any other print format. The header of the print format should be one line long, and should contain a reference to the "STYLE SHEET" that will be used to format the desired text in the publisher:
eg. "STYLE TLIST1.INC"
where TLIST1.INC contains various parameter settings such as the column width, column gutter, margin settings, headers, footers, etc. that are necessary for the layout of the page and for the selection of the font type to be used.

For the most part, fields should be printed one after the other without intervening lines or spaces. All spacing and formatting will be done through the use of the publisher tags and commands as literals in the print format. Commands which appear before a field will take effect during the printing of the field. Work is presently in progress to determine the various publisher commands that can be used within the fields and/or the style sheets.

In order to prepare the file for transfer to the PC, the output from MINISIS PRINT must be sent to a disk file instead of directly to a line printer as is normally the case. Once the file is transfered to the PC using an appropriately chosen communication software that can handle Arabic strings as well as Latin, this file is passed through a specially developed filter that will perform such tasks as the deletion of unwanted control codes, mapping of code tables, etc., which will in turn pass control to the publisher for printing the document either automatically or via the publisher editor. At this stage users can preview their document in a WYSIWYG (What You See Is What You Get) format prior to printing it.

Enclosed are samples of MINISIS report listings that were passed through the above mentioned interface and published on the Hewlett Packard LaserJet II using the ArabScript Professional Publisher.

MINISIS/PUBLISHER INTERFACE



TWO MODES OF OPERATIONS:

- ATTENDED PC
- UNATTENDED PC

ISSUES TO CONSIDER FOR THE INTERFACE

A Special Terminal Handler For The Publisher

The Embedding Of Publisher Tags Within The MINISIS Records

Design Of Style Sheets Along Generally Accepted Report Formats

The Preparation Of The Print File To Be Transfered To The PC

File Transfer/Communications With The PC

Filtering And Publishing The Document

الجغرافيا البشرية

الجغرافية الإقتصادية دراسة للعوامل طبيعية و بشرية و للموارد : مائية و حيوانية.. فيليب رفله. [43]

الحركات السياسية

في الثورة العربية . شلبي العيسمي. [41]

الحضارة الحديثة

الفكر العربي في معركة النهضة. أنور عبد الملك. بدر الدين عرودكي. [40]

الحكومة العسكرية

المجتمع المصري و الجيش. أنور عبد الملك. محمود حداد. ميخائيل خوري.[38]

في الثورة العربية. شلبي العيسمي. [41]

الديمقراطية

في الثورة العربية . شلبي العيسمي. [41]

في الثورة العربية. شلبي العيسمي. [41]

التطبيقات

التوازن اللاقتصادي و إمكانياته بالدول العربية. محمد مبارك حجير. [42]

التطور السياسي

المجتمع المصري و الجيش. أنور عبد الملك. محمود حداد. ميخائيل خوري. [38]

التغير اللاجتماعي

المجتمع المصري والجيش. أنور عبد الملك. محمود حداد. ميخائيل خوري. [38]

الثورات

في الثورة العربية. شلبي العيسمي. [41]

الجغرافيا اللاقتصادية

الجغرافية الثلاقتصادية دراسة للعوامل طبيعية و بشرية و للموارد : مائية و حيوانية.. فيليب رفله. [43]

اللاجتماعي / /التحليل / /مصر/ 1552-1967 - /اللاشتراكية/ /القومية العربية/

30/09/85 RELES

في الثورة العربية. شلبي الميسمي. /الحركات السياسية/ /الوحدة العربية/ /الثورات / /اللاشتراكية/ /الديمقراطية/ /الحكومة العسكرية/ /التحليل / /البلدان العربية

15/08/85 RELES

A New framework for complementarity among the Arab economies. Yusif A. Sayigh.
/economic integration/ /Arab countries/ - /economic co-operation/ /League of Arab States/ /summit conferences/ /1980/
RELES. 02/05/85

Arab institutions of higher learning and their own manpower development. Samir N. Anabtawi.
/higher education/ /educational institutions/ /educational development/ /Arab countries/ - /universities and colleges/ /educational systems/ /educational psychology/
RELES. 02/05/85

Case studies in technology transfer in the Arab world. Lawrence L. Edwards.
/technology transfer/ /case studies/ /Egypt/

التوازن الاقتصادي و إمكانياته بالدول العربية. محمد مبارك حجير . /الاقتصاد الكلي/ - /التطبيقات / /البلدان العربية/

1986-02-11 RELES

الجغرافية الاقتصادية دراسة للعوامل طبيعية و بشرية و للموارد : مائية و حيوانية. فيليب رفله. /الجغرافيا الاقتصادية/ - /الزراعة/ /الانتاج الزراعي / /الموارد المعدنية/ /موارد الطاقة/ /الصناعة/ /النقل / /التجارة الدولية/ /الجغرافيا البشرية/

1986-02-21 RELES

الجيش و الحركة الوطنية : مصر ، فيتنام ، الباكستان ، أندونيسيا، اليابان ، الصين ، الكونفو. أنور عبد الملك. حسن قبيسي. /القوات المسلحة/ /دور/ /السياسة الحكومية/ /مصر/ /الباكستان / /إندونيسيا/ /فيتنام / /اليابان / /الصين / /الكونفو/

07/11/85 RELES

الفكر العربي في معركة النهضة. أنور عبد الملك. بدر الدين عرودكي. /النهضة/ /الحضارة الحديثة/ /الاسلام و السياسة/ /البلدان العربية/ /مصر

12/08/85 RELES

المجتمع المصري و الجيش. أنور عبد الملك. محمود حداد. ميخائيل خوري /الحكومة العسكرية/ /دور/ /التطور السياسي / /التغير

/Saudi Arabia/
RELES. 02/05/85

Contestations en pays islamiques. Trand Badie. Christian Coulon. Bernard Cubertafond.
/mouvements de protestation/ /marxisme/ /mouvements religieux/ /Islam et politique/ /pays islamiques/ - /tudes de cas/ /Algrie/ /Snegal/ /Turquie/
RELES. 1986-07-18

Ideological determinants of Arab development. Halim Barakat.
/development/ /ideology/ /Arab countries/ - /development models/ /social classes/ /socialism/ /reform/
RELES. 02/05/85

Islamic revival and the crisis of the secular state in the Arab world : an historical appraisal. Philip S. Khoury.
/Islam and politics/ /religious movements/ /Arab countries/ - /social aspects/ /secularism/ /Arab nationalism/ /history/
RELES. 02/05/85

L'Enfance du monde : structures familiales et dveloppement. Todd. Emmanuel
/alphabetisation/ /impact/ /dveloppement/ /famille/ /enthropologie socio-culturelle/ /tudes de cas/ /Europe/ /pays en dveloppement/
RELES. 1986-07-18

La Politique militaire de la France en Afrique. Pascal Chaigneau.
/relations militaires/ /politique militaire/ /assistance militaire/ /France/ /Afrique au Sud du Sahara/
RELES. 1986-05-19

Le Declin du marxisme. Lucio Colletti.
/marxisme/ /valuation/ /Europe/ 1968-1979
RELES. 1986-10-28

Les Grandes conomies : Etats Unis, Japon, Allemagne Fdrale, France, Royaume Uni, Italie. Yves Barou. Bernard Keizer.
/politique conomique/ /conditions conomiques/ /Allemagne Fdrale/ /USA/ /France/ /Italie/ /Japon/ /Royaume Uni/
RELES. 1986-07-18

NATO : facts and figures.
/North Atlantic Treaty Organization/ /history/ /activities/ /organizational structure/ /1949-1975/ /documents/
RELES. 19/04/85

Social implications of labor migration in the Arab world. Janet Abu-Lughod.
/migrant workers/ /social consequences/

AUTOMATED SYSTEM AGRALIN

In Jan-Kopshuis (Jan Kopshouse) in Wageningen and several other agricultural libraries in the Netherlands, an advanced computer system is being used for library administration, searching of scientific literature and documentation. The system used is called AGRALIN: AGRicultural Automated Literature Informationsystem Netherlands. Much data are stored in the database, among these are 500,000 own titles and 72,000 F.A.O.-titles. Also available are 5,000 IDRIS records. These concern information about those development research projects that are carried out by agencies participating in IDRIS. IDRIS records are distributed by the IDRC. The system is characterized by the on-line accessibility of all the stored data from 110 terminals.

The system is the result of co-operation between the Directorate of Agricultural Research of the Ministry of Agriculture and Fisheries and the Agricultural University. It is still in the process of growth; gradually more libraries will be connected to the system. The Automation department which is responsible for AGRALIN is accommodated in Jan-Kopshuis.

Purpose and history

The purpose of the earlier called BAS-project, is the automation of library and documentation tasks to assist agricultural institutes in the Netherlands. The building of the system was started in 1978, after a statement of requirements for an automated library system in Wageningen was accepted in 1977. The purpose of the automated system is to integrate catalogues and documentation data of the libraries and documentation centres for agriculture in the Netherlands. The building up of the terminal network is therefore closely linked with the building up of an agricultural library network on the one hand and an agricultural documentation network on the other. This is reflected in the organizational plan of AGRALIN. The software system MINISIS, which has been developed by IDRC (International Development Research Centre) in Ottawa, Canada, is being used. It is a relational database management system and is very suited to bibliographic applications. On 1 January 1980 the first functions of the system became operational. The bibliographic data can also be searched on a commercial basis. The newest function of AGRALIN is the Online Ordering system implemented in 1986.

AUTOMATED FUNCTIONS

It would take too much space to describe each automated function in detail. However, the main functions of AGRALIN are described below.

Order-administration

All orders for books and periodicals of the libraries of the Agricultural University are registered in the database. Every user of AGRALIN can see whether a publication is on order. The order forms and claims are printed by AGRALIN; all financial data are transferred to financial-administrative systems.

Cataloguing and catalogue records

The database contains information on titles and data about the whereabouts of publications. This function is essential for the exchange of information. This makes it possible to build up a free-access integral catalogue.

Storage of documentation data

Documentation records can be entered into the database, to be retrieved later and printed with a special line

printer on paper that can be used as hard copy for publications.

Search facilities

It is possible to access the information stored in the database in three different ways:

- on-line, using the MINISIS Query language
- on-line, using the menudriven Online Catalogue function
- searching the microfiche catalogues supplied by AGRALIN; namely the personal author names and the title words catalogues for books, the systematic UDC (Universal Decimal Classification) catalogue for books and documentation and title words catalogue for periodicals.
- from several of the printed listings provided for special users.

Lending administration

The lending administration manages the lending out, reservation, and return of items, and at the same time can provide information directly from the catalogue. Reminder cards are printed automatically by the system. The "loans" is based on the using of barcodes for borrowers and item identification.

Serials administration (CARDEX)

The serials administration not only registers the incoming numbers of a running serial but can also, in case of discontinuation, automatically print and send claims.

Online Ordering

Within Query you can online order a copy of an article or a book at one of the participating libraries.

SDI (Selective Dissemination of Information)

With the SDI system, tapes with information about new titles, delivered by other systems, are searched on user's requests. Search profiles determine what special information is to be selected for the user. It is also possible to produce the information automatically in a format that can be downloaded into a micro computer at the user's place and imported directly into a local micro computer database system. The profiles can also be run against the own AGRALIN database.

HARDWARE

For running AGRALIN the following hardware is used:

- HP 3000 series 70 computer
- 3 lineprinters (400 lpm)
- 5 disc-drives (404 Mb)
- 1 tape-unit (1600/6250 bpi)\
- 1 tape-unit (1600 bpi)
- 110 terminals direct connected or by telephone lines

PLANS FOR THE FUTURE

Although AGRALIN is generally rather advanced, and unique in the Netherlands, in the future developments in information science and automation will have to be closely followed to guarantee that the system remains a modern and efficient one that is easy to use by interested parties.

Facts and figures about AGRALIN (1988)
AGRALIN is an acronym for: AGRicultural Automated Literature Informationsystem Netherlands

Staff working on AGRALIN: 6

Own titles in AGRALIN database: 500,000 of which:

- 9,000 orders
- 27,000 serials
- 370,000 books
- 95,000 in the documentation database (titles with or without a summary)

Programming interface in

C, Pascal, Cobol

Program architecture

- A program consist of data and code

- code is divided into segments. On HP3000, a program has up to 64 variable-length segments of code. Each segment is up to 32K byte. On 900 series, Code is up to 2G byte.

- Each program has one data segment. On HP3000, data segment is restricted to 64K byte. On 900 series, data segment is up to 2G byte.

- On HP3000, program segmentation is controlled by a programmer. On 900 series, program segmentation is done by hardware. A program is divided into fixed-size pages.

- MINISIS is centered around the HP3000 stack architecture. The addressability of data is limited to 64K byte. On 900 series, it is not clear how a native-mode program to handle a compatibility-mode procedure.

Data types

Small integer (-32768 - 32767)

SPL:	integer, logical
COBOL:	Pic S9(4) usage COMP
PASCAL:	type sint=-32768..32727
C:	short

Integer (-268435457 - 268435456)

SPL:	double
COBOL:	pic S9(8) usage COMP
PASCAL:	integer
C:	long

Byte (0 - 255)

SPL:	byte
COBOL:	pic x
PASCAL:	char
C:	char

Array of small integer

```
SPL:      integer array, logical array
COBOL:    pic S9(4) usage COMP
           occur x times
PASCAL:   array[1..n] of sint
C:        short xx[n]
```

Array of integer

```
SPL:      double array
COBOL:    pic S9(8) usage COMP
           occur n times
PASCAL:   array[1..n] of integer
C:        long xx[n]
```

Array of byte

```
SPL:      byte array
COBOL:    pic x occur n times
PASCAL:   packed array[1..n] of char
C:        char xx[n]
```

Record structure

```
SPL:      integer array xx(0:10)
           byte array xx'(*)=xx
           define int=xx(0)#;
           define byt=xx'(2)#;
COBOL:    01 record.
             05 int pic S9(4) COMP.
             05 byt pic x.
PASCAL:   record
             int:  sint;
             byt: char;
          end;
C:        struct record{
             short int;
             char byt;
          };
          record xx;
```

String Type not used

High–level intrinsics

- High-level intrinsics permit user to write application without in-depth knowledge of MINISIS internals.

- These intrinsics are designed to interface with high-level 3GLs. The calling sequence is confirmed with the following specifications:

  . it is not a typed procedure.
  . parameters are passed by reference
  . parameters are passed in word-address
  . fixed number of parameters

- High-level intrinsics can be broken into six categories:

  DBMS
  Inverted file manipulation routine
  Record displaying routine
  I/O routine (terminal and printer only)
  user dialogue
  Utilities

External procedures

- An external procedure is stored outside an application program and is binded to a program at run-time and/or program preparation time.

- MINISIS external procedures are stored in the SL library. When a program is run, users have to specify which SL is binded to the application program. ie.

  :run program;lib={G | P | S}

- For Cobol, external procedures can be called without making previous declaration. No checking is done on parameter type and number of parameters

  Call "PROC" using PARM1,PARM2.

- For SPL, external procedures have to be declared before they can be used . MINISIS provides all formal declarations of high-level intrinsics in INTRINS.PUB.MINISIS.

```
INTRINSIC(INTRINS.PUB.MINISIS) PROC;
PROC(PARM1,PARM2);
```

- Pascal expects that a procedure must be declared before using it. ie.

```
procedure PROC(var PARM1: sint;
                   var PARM2: sint);
                   external SPL;
PROC(PARM1,PARM2);
```

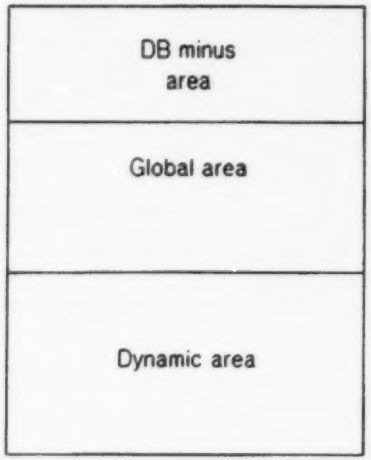
- C expects that a procedure must be declared before using it. ie.

```
extern void PROC(short *PARM1,
                 short *PARM2);
PROC(PARM1,PARM2);
```

** Please note that CCS/C does prototype checking.

Run–time environment

- MINISIS is designed around the HP3000 stack architecture. When a program is run, MINISIS expects the data stack(data segment) is set up as follows:



DB minus area is not accessable from 3GLs except SPL. This area is used by MINISIS,

and MPE subsystems. ie.

MINISIS communication area
V/PLUS form buffer
PASCAL heap area
CCS/C dynamic spaces area

- MINISIS and HP subsystems call the PASCAL heap management routine to manage this area. This area is expanded when more spaces are needed.

- MINISIS requires the first 700 word of this area. It means that MINISIS has to make the first call to the PASCAL heap routine.

- Programmers must include the INITPROG call in their program so that MINISIS can obtain the first 700 word of DB minus area.

- The startup routine of CCS/C is executed before the first statement of a program. It acquires spaces from the DB minus area. MINISIS does not function properly because some spaces in the first 700 word are used by CCS/C.

The workaround of this problem is to rewrite the startup routine. CCS/C permits users to customize the startup routine. The first statement of the startup routine is to call INITPROG.

Program preparation

- An application program could be prepared in SPL, COBOL, PASCAL or CCS/C.

- If a HP300/ program is greater than 32K byte, a program has to be broken into segments. Segmentation is controlled by programmers. ie.

```
COBOL:  Procedure division.
          segment1 section 02.
            .
            .
          segment2 section 03.

SPL:  $control segment=segment1
        .
        .
      $control segment=segment2

PASCAL: $SEGMENT segment1$
          .
          .
        $SEGMENT segment2$
```

- For CCS/C. Segmentation is done by the linkage editor(CLINK).

```
NS        <---segment1
Re,crel1
Re,crel2
NS        <---segment2
```

- A source program is compiled into an USL. The linkage editor(segmenter or CLINK) prepares a program from an USL(or CREL). A program has to be prepared with the following parameters:

USLs:

```
Prep USL,PROG;dl=700;maxdata=32000;&
  cap=ia,ba,ds,mr,ph
```

CRELs:

```
CLINK -RE:crel,-Ou:PROG,-DI:700,&
  -IA,-BA,-DS,-PH,-MR,MD:32000
```

- A program has to be run with a SL library.

Exit preparation

- An exit is a procedure in a SL library. It is not a stand-alone program and must be called by other procedure or a program.

- An exit can has local variables which are allocated at each calls and access global data through parameters.

- The source of exit is prepared in either SPL, COBOL, PASCAL or CCS/C. An exit is compiled into an USL. If CCS/C is used then programmers must run MOVECREL to convert a CREL to an USL. The USL of exit contains no outer block and has one or more segments.

- A compiler meta command has to be included in the source of exit in order to eliminate the outer block. ie.

  SPL: $control subprogram

```
$control segment=cxproc
procedure cxproc(x);
integer x;
begin
      .
      .
end;
```

```
COBOL: $control dynamic
       identification division.
       program-id. cxproc.
       data division.
       linkage section.
       77 x pic s9(4) usage COMP.
       procedure division using x.
```

```
PASCAL: $subprogram$
        $segment cxproc$
        procedure cxproc(var x:sint);
        begin

        end;
```

CCS/C: void cxproc(short *x);
{

}
/* omit main() */

- An USL contain one or more segments. A segment consist of one or more procedures. The procedure name is the same as the exit name. The segment name is named by programmers or compiler.

- An exit is added to the SL library through segmenter. the segment containing the exit is added to the SL library. ie.

:Segmenter
-SL SL
-purgesl segment,cxproc
-usl usl
-addsl cxproc
-exit

- High-level exit names must be started with CX and followed with alphanumeric string.

C STARTUP ROUTINE TO INTERFACE MINISIS WITH CCS 'C' - WRITTEN AT IDRC

```
                    1
                    2  #include <stdio.h>
                    3
                    4  #intrinsic ARITRAP
                    5  #intrinsic TERMINATE
                    6  #pragma intrinsic (intrins.sourcee.ferris) INITPROG
                    7  #pragma intrinsic (intrins.sourcee.ferris) ENDPROG
                    8  extern int main();
                    9
                   10  _startup()
000000             11  {
000000             12    ARITRAP(0);
000002             13    INITPROG();
000003             14    _INIT_LIB;
000014             15    main();
000017             16    ENDPROG();
000020             17    TERMINATE();
000022             18  }

Code size = 022 words  Static DB size = 00 words

Total errors = 0
Total warnings = 0
```

Program Start up

Before a C program begins execution at the "main" function, a runtime environment must be established for it. This involves several operations which are all performed by the start up program called "_startup."

When CLINK produces an executable module, it causes control to pass to the _startup function whenever the module is executed. The _startup function establishes the runtime environment and then passes control to the user's main routine. When the main routine executes a return, control is passed back to the _startup module which then closes down the runtime environment and returns control back to the MPE. The actual steps followed by the _startup module are:

1. Disable the arithmetic traps

C programs all execute with traps disabled. The "ARITRAP" intrinsic is called to disable the traps:

ARITRAP(0);

2. Get the INFO string.

The INFO string is parsed and broken down into the substrings which will be used as the argv argument to the main.

3. Get the process information

The PROCINFO intrinsic is called to get the process name. This is used as agrv[0]. This is to remain compatible with the UNIX definition of the argv usage.

4. Look for stdin/stdout redirection

The argv strings are searched looking for strings which begin with '>' or '<'. If the '>' character is found, then the string is used as a file name for teh redirection of stdout. The stdout file is fopen'd to the new file name. Note that the argv value is removed from the argv list.

If the '<' character is found, then the string is used as a file name for the redirection of stdin. See the section on "Standard file redirection" for more details.

5. Default stdin/stdout

If the stdxx files have not been redirected, then they are opened to their default devices:

std file	option	MPE file
stdin	"r"	$STDIN
stdout	"wc"	$STDLIST
stderr	"wc"	$STDLIST

6. Initialize the setjmp for exit.

The exit routine is defined to pass control back to the _startup function for program shutdown. This is done by setting up a jump buffer via setjmp.

7. Call the user's main

The user's main program is now called. It is passed the argc, argv arguments. If main does a return or falls off teh end of the main function, control will be passed back to immediately before the call to main. If the exit routine is called, then the longjmp mechanism will return control to the same place with the same stack setup as if the return was from the main. See the discussion ofthe setjmp function for further details on its workings.

8. Execute the onexit functions

If the user has specified any "onexit" routines are to be called, the _startup function will call them. No arguments are passed to the routines and no results are returned.

9. Close opened files

All files which were opened and area still opened are closed. This is done by calling the standard fclose function for each opened file.

10. Terminate to MPE

The job control word is set to the value provided and the TERMINATE intrinsic is called to pass control back to the MPE.

This section is exerpted from the CCS/C Reference Manual pages 5-20 through 5-22 MPE Interfacing March 1988.

SITUATION ACTUELLE DE L'INFORMATIQUE DOCUMENTAIRE AU SÉNAT

Sous l'impulsion du Président Alain POHER, l'informatique documentaire au Sénat a pris naissance au niveau des études en 1975, et sur le plan opérationnel en 1978.

Elle a ensuite fait l'objet d'un premier schéma-directeur de développement pour la période 1982-1986, approuvé par le Bureau du Sénat le 29 octobre 1981. Un second schéma-directeur est en cours d'élaboration pour la période 1989-1993.

Le présent document a pour objet de faire le bilan des résultats obtenus.

♦

♦ ♦

Le premier schéma-directeur avait fixé trois objectifs essentiels:

- la diffusion de l'information au sein du Sénat à partir de terminaux d'interrogation,
- le développement de bases de données parlementaires sur un ordinateur interne,
- la mise en oeuvre d'un système télématique en Vidéotex (Minitel).

Les résultats obtenus peuvent être appréciés au double point de vue des **information disponibles** sur l'ordinateur du Sénat et sur les ordinateurs extérieurs et des **moyens d'interrogation** qui permettent d'accéder à ces informations, en soulignant également l'organisation d'une **formation permanente** qui s'est révélée indispensable.

A. - LES INFORMATIONS DISPONIBLES

1) Sur des ordinateurs extérieurs au Sénat

Par l'intermédiaire de huit centres serveurs:

- G.CAM (filiale de la Caisse des Dépôts)
- TELESYSTEMES (sous-filiale de la Direction Générale des Télécommunications)
- JURIDAL (société chargée de la diffusion des bases de données juridiques)
- GSI-ECO (sous-filiale de la Compagnie Générale d'Electricité)
- Centre Serveur des Communautés Européennes
- RESAGRI (Ministère de l'Agriculture)
- DATASOLVE (serveur anglais de banques de données sur l'actualité internationale)
- Centre Interdépartemental de gestion de la grande couronne de la région d'Ile-de-France

et des réseaux spécialisés de transmission nationaux (TRANSPAC) et internationaux, le Sénat accède à:

- près de 140 bases de données différentes,
- plus de 53 millions de documents bibliographiques ou en texte intégral,
- plus de 550.000 séries statistiques en ligne.

Au total, en 1987, les centres serveurs extérieurs ont été consultés pendant 1.200 heures à partir du Sénat, ce qui traduit une diminution par rapport à 1985 (1.550 heures) et à 1984 (1.500 heures). Celle-ci s'explique par le transfert sur l'ordinateur interne du Sénat de bases de données disponibles sur les ordinateurs des centres serveurs extérieurs et notamment de la base "Questions des Sénateurs" interrogeable uniquement sur le serveur G-CAM avant mai 1985, maintenant consultable gratuitement sur l'ordinateur interne par les utilisateurs du Sénat.

Les bases de données les plus interrogées ont été celles de l'Agence France Presse, le fichier législatif et réglementaire du Secrétariat Général du Gouvernement, les bases de données relatives à la législation nationale et à la jurisprudence des cours et tribunaux, la banque de données d'information politiques et d'actualité de la

Documentation Française et, bien entendu, les trois bases de données produites par le Sénat depuis 1978 et diffusées sur le centre serveur G-CAM, qui, en octobre 1987, se présentent dans les conditions suivantes:

La base **SENA** avec deux sous-bases SDEB et SRAP comporte **35 million de caractères** utiles et analyse plus de **3.200 débats** au Sénat et plus de **3.000 rapports et avis** de Sénateurs.

La base **SINT** comporte plus de **39 millions de caractères** utiles et compte plus de **22.000 interventions** de Sénateurs ou de membres du Gouvernement en séance publique au Sénat.

La base **QS01** comporte plus de **40 millions de caractères** utiles et regroupe plus de **53.000 questions** (écrites, orales, avec ou sans débat, et questions posées mensuellement au Gouvernement) de Sénateurs et réponses des Ministres.

Les tables analytiques et nominatives des **questions et des travaux parlementaires**, éditées annuellement, le sont en photocomposition programmée par ordinateur à partir de la base correspondante.

2) Sur l'ordinateur interne au Sénat

Les bases de données conversationnelles développées sur cet équipement englobent, tant des travaux de documentation que des tâches de gestions.

En matière de **documentation**, les bases de données suivantes sont consultables:

- **Ordre du jour** des séances du Sénat,
- **Réunions au Sénat** (groupes, commissions, délégations);
- **Fichier législatif:** état des **processus législatifs** au Parlement depuis 1978;
- **Application des lois:** contrôle par le Sénat de l'application des lois par le Gouvernement;
- **Questions des Sénateurs:** références des questions écrits, orales, avec ou sans débat, et au Gouvernement posées au Sénat depuis 1978, et **texte intégral** des questions écrites et des réponses des ministres à ces questions depuis avril 1986;
- **Rapports:** références et sommaires des rapports et avis déposés au Sénat depuis avril 1978;
- **Bulletin des Commissions:** depuis le 2 avril 1986, compte rendus des réunions de commissions qui sont publiés chaque semaine dans le Bulletin des Commissions;
- **Organismes extra-parlementaires:** représentation du Sénat au sein des organismes extra-parlementaires;
- **Analyse des scrutin publics:** résultats et analyse politique des scrutins publics internes au Sénat depuis le 1er avril 1984;
- **Vote des Sénnteurs:** position de vote de chaque Sénateur sur les scrutins publics ayant eu lieu depuis le 1er avril 1984;
- **Fichier des Sénateurs:** renseignements d'ordre général sur chaque Sénateur;
- **Statistiques sur le Sénat:** répartition des Sénateurs au sein des groupes politiques, composition politique des commissions, composition du Sénat par tranches d'âge et moyenne d'âge, représentation socio-professionnelle au Sénat, mandats locaux, départementaux et régionaux détenus par les Sénateurs;
- **Règlement du Sénat:** ensemble des articles se rapportant à une même matière et figurant à différents chapitres du Règlement;
- **Articles de revues et dossiers d'études:** références des articles sélectionnés et indexés par le Service de la Bibliothèque et des dossiers d'études réalisés par la Division des Renseignements du Service des Etudes Législatives;
- **Présidence et services:** coordonnées des fonctionnaires du Sénat, des membres du Cabinet de M. le Président et des collaborateurs des groupes politiques;
- **Statistiques économiques:** plus de 200 tableaux actualisés mensuellement proposent, pour 14 pays et la C.E.E. en tant que telle, un faisceau d'indicateurs économique pour les treize dernières années et les treize

derniers mois.

Ces bases de données documentaires sont interrogeables sur l'ordinateur interne, tant au moyen d'un terminal classique d'un terminal Minitel.

En matière de **gestion, 20 bases de données** ont été développées. Elles permettent entre autres un suivi très précis des problèmes de gestion interne au Service des Impressions, de la Documentation parlementaire et de l'Informatique. l'enregistrement des décisions et arrêtés de Questure et l'édition du répertoire annuel correspondant, la description et l'occupation de chaque pièce du Palais du Luxembourg, la structure et l'affectation du personnel, la gestion automatique des procédures de recrutement de certaines catégories de personnel.

En tout, une **quarantaine de bases de données** ont donc été constituées sur les ordinateurs serveurs du Sénat depuis la première installation en avril 1983. Elles occupent un volume **d'un milliard 300 millions de caractères** en mémoire de masse (disque magnétiques).

En outre, est opérationnel depuis le début de l'année 1986 un système de **messagerie électronique** qui doit permettre à toute personne disposant d'un code d'accès de recevoir et d'envoyer des messages au moyen d'un terminal Minitel.

En 1987, le système informatique interne du Sénat a travaillé pendant près de 37.000 heures qui s'analysent en:

- 4.900 heures de connexion en mode recherche pour effectuer les interrogations,
- 7.600 heures de connexion pour saisie ou modification de documents,
- 7.200 heures de travaux conversationnels pour des développements de bases de données ou des programmes annexes,
- 17.300 heures de travaux différés qui s'effectuent pour la plupart de nuit par enchaînement automatique d'instructions.

B) LES MOYEN D'ACCÈS A L'INFORMATION

Pour consulter les bases de données ci-dessus énumérées, le Sénat dispose d'un ensemble de terminaux classiques (télétypes), donnant accès au moyen d'un réseau interne et d'un aiguilleur de lignes, soit aux différents centres serveurs extérieurs, soit au centre serveur interne[1].

Par ailleurs, un système Videotex utilisant les terminaux Minitel a été mis progressivement en place, depuis l'automne 1984.

1) Les terminaux classiques (télétypes)

Ces postes de travail composés d'un écran-clavier, d'une imprimante et d'un modem sont installés dans les services et les groupes politiques du Sénat. Ils sont destinés à une utilisation professionnelle des fonds documentaires automatisés auxquels le Sénat accède.

Au total, 66 postes de travail télétypes sont implantés au Sénat pour réaliser des recherches documentaires complexes et pour éditer leurs résultats avec une qualité de présentation élevée, lorsque cette édition est effectuée avec une machine de traitement de texte.

2) Les terminaux Minitel (Vidéotex)

Ces terminaux à clavier simplifié, à écran taille réduite et dépourvus d'imprimante, sont proposés sur l'ensemble du territoire national par la Direction Générale de Télécommunications pour la consultation de l'annuaire téléphonique électronique.

Ils permettent, en outre, par les différents réseaux de transmission téléphonique, d'accéder notamment aux

---

[1] le centre serveur interne se compose, depuis le renforcement approuvé par le Bureau du Sénat le 18 décembre 1985, de deux unités centrales HEWLETT-PACKARD 3000 disposant chacune d'une capacité de stockage sur disques de 808 millions d'octets.

bases de données parlementaires diffusées sur les centres serveurs extérieurs et sur l'ordinateur du Sénat.

A l'initiative de M. Pierre-Christian TAITTINGER, Président de la Délégation du Bureau chargée de l'Informatique, il a été décidé en mai 1984 de proposer l'utilisation de cet équipement à un certain nombre de Sénateurs volontaires.

Une première phase de développement s'était déroulée de novembre 1984 à octobre 1985 et avait entraîné l'installation de 125 terminaux MInitel au Palais du Luxembourg.

Successivement, à partir d'octobre 1985, d'avril et de juillet 1986, en trois nouvelles phases de développement, les 319 Sénateurs ont été progressivement équipés de terminaux Minitel, l'ensemble de l'opération s'étant terminée fin 1986.

A l'heure actuelle, près de 500 terminaux de téléinformatique, télétypes et Minitel confondus, sont implantés au Sénat.

C) LA FORMATION PERMANENTE DES UTILISATEURS

L'interrogation des banques de données au moyen des terminaux télétypes ou de Minitel nécessite une formation permanente des utilisateurs.

Depuis le mois d'avril 1982, la Division de l'informatique a organisé près de 320 stages différentes qui ont eu pour objet:

- d'enseigner les modalités de fonctionnement d'un terminal (télétype au Minitel),
- de familiariser les usagers avec les techniques de consultations des différents serveurs accessibles,
- d'approfondir les connaissances d'un produit documentaire spécifique disponible sur les serveurs extérieurs ou sur le mini-ordinateur interne.

L'ensemble des personnes concernées par ces stages ont été les Sénateurs eux-mêmes, les fonctionnaires du Sénat, le personnel des secrétariats des groupes politiques et les assistants de Sénateurs, habilités. A ce jour, plus de 700 personnes, parmi lesquelles environ 95 Sénateurs, ont suivi au moins un stage informatique et près de 4.500 heures de formation individualisée ont été dispensées par la Division de l'informatique depuis avril 1982.

Pour la seule année 1987, 62 stages distincts ont été proposés et près de 120 personnes (Sénateurs, fonctionnaires, membres des Secrétariats des groupes politiques ou assistants de Sénateurs) se sont inscrits à un ou plusieurs d'entre eux.

Le bilan de l'effort de formation entrepris est donc loin d'être négligeable. Encore est-il nécessaire de reprendre sans cesse cette formation soit en fonction du changement ou des mutations des personnes formées, soit en raison d'une pratique insuffisante ou inexistante après le stage. L'augmentation du nombre de terminaux télétypes et la grande diffusion des Minitel doivent remédier à cette situation pour tous ceux qui comprennent l'intérêt d'utiliser les nouveaux moyens de documentation automatisée mis à leur disposition.

CONCLUSION

Les objectifs du premier schéma-directeur adopté par le Bureau du Sénat le 29 octobre 1981 ont été, non seulement atteints mais largement dépassés. Les résultats obtenus placent le Sénat à un haut niveau de réputation, tant en France qu'à l'étranger, ainsi qu'en témoignent les nombreuses présentations demandées au Service.

Ils doivent cependant être consolidés et de nouveaux développements doivent être mis en oeuvre qui font précisément l'objet du second schéma-directeur en cours d'élaboration pour la période 1989-1993.

Ces développements porteront vraisemblablement:

- sur une **intégration** plus complète des matériels et des applications bureautiques dans le système

informatique général,

- sur une extension et un enrichissement du **réseau** de télécommunications interne,

- sur la mise en œuvre de **systèmes experts** améliorant la **convivialité** des produit documentaires proposés aux utilisateurs,

- sur l'utilisation de nouvelles technologies et notamment du **disque optique numérique.**

En tout état de cause, le Sénat continuera à mettre en oeuvre un système de documentation automatisée de qualité, diffusant largement les travaux parlementaires et assurant un accès rapide à une volume toujours croissant d'informations.

La pleine utilisation de ces nouveaux moyens informatiques et télématiques doit permettre au Sénat de mieux faire face à la mission fondamentale qu'il assume au sein des institutions de la République.

Mais, en ce domaine plus qu'ailleurs, la vie est mouvement et nécessite une adaptation permanente en raison de l'évolution continue des technologies, des méthodes de travail et des besoins des utilisateurs.

DOCUMENTATION AND DATA PROCESSING AT THE FRENCH SENATE

Under the impetus of Mr. Alain POHER, President of the French Senate, studies concerning documentation data processing started in 1975. The system became operational in 1978.

A development programme was then elaborated for the years 1982-1986. It was approved by the Bureau of the Senate on october 29 1981. A second development program is now being elaborated for the years 1989-1993.

This document analyzes the results which were obtained.

♦

♦ ♦

The first development program had defined three main aims:

- data availability inside the Senate by means of interrogation terminals;
- the creation of parliamentary data bases on an inhouse computer;
- the establishment of a Videotex telematic system (Minitel).

A. - Available data

1) On outside computers

The French Senate has access to:

- nearly 140 different data bases
- more than 53 million documents or abstracts
- more than 550.000 online statistical series.

This is achieved through eight serving centers:

- G.CAM (subsidiary of the Direction Générale des Télécommunications)
- TELESYSTEMES (sub-subsidiary of the Direction Générale des Télécommunications)
- JURIDAL (company specialized in the dissemination of legal data bases)
- GSI-ECO (sub-subsidiary of the Compagnie Générale d'Electricité)
- European Community serving center
- RESAGRI (Ministry of Agriculture)
- DATASOLVE (English serving center specializing on international news and current events)
- Computer center operated by local authorities in the Paris region

and through specialized data transmissions networks in France (Transpac) and abroad.

In 1987, these serving centers have been interrogated from the Senate for a total of 1.200 hours. It represents a slight diminution[2] in comparison to 1985 (1.550 hours) and 1984 (1.500) hours, but a real increase when looking at the figures for 1983 (1.000 hours) and 1981 (600 hours).

The most frequently consulted data bases are the Agence France Presse file, the Government legislative file, the various legal data bases, the information on political and current events of the Documentation français and, naturally, the three data bases produced by the Senate itself since 1978. These are consultable on the serving center G.CAM.

---

[2] This decrease can be explained by the transfer to the inhouse computer of several data bases up to then obtainable only from external sources.

As of october 1987, they present the following characteristics:

- SENA, with its two divisions SDEB and SRAP, contains over 35 million bytes and analyzes more than 3.200 Senate debates and more than 3.000 Senators' reports and opinions;

-SINT contains over 39 million bytes and the analysis of 22.000 Senators' and Government members' oral statements before the Senate.

- QS01 has more than 40 million bytes and contains about 53.000 questions addressed by Senators to the Government and the Government's answers to them.

The yearly analytical and nominative tables concerning questions and legislative work done in the Senate are produced directly from the corresponding data bases.

2) On the inhouse computer

The interactive data bases which have been developed concern documentation but also management tasks.

The consultable data bases are:

- the **Senate's agenda**
- the daily **meetings** of the various committees and political groups in the Senate
- the **legislative file**, including the status of all bills since 1978
- the **implementation of all acts** by Government and control over it by the Senate
- an abstract of all **questions** addressed by Senators to the Government since 1978 and the Government's answers to them, including their full text since april 1986
- an abstract of the **reports and opinions** tabled in the Senate since april 1978
- the **Committees' Bulletin** which contains the full text of the minutes of the committees meetings since april 1986
- the **extra-parliamentary organizations** in which the Senate is represented
- the political **analysis of the public votes** which have taken place in the Senate since 1984 with their detailed results
- the **Senators' personal voting** in each public vote in the Senate since 1984
- the **Senators' file** including various information on each member of the Senate
- **Senate statistics** concerning political affiliation, committee membership, average age, professional occupation, other political mandates held by Senators
- the **rules of the Senate** consultable by subject-matter
- appropriate references to **magazine articles and newspaper excerpts**, as selected and classified by the Senate's Library, as well as to **studies** made by the Senate's Department for Legislative studies
- means of reaching members of the Senate's staff, assistants to political groups and the President's personal staff.
- **economic statistics**, including over 200 monthly updated tables showing various economic indicators concerning 14 countries and the EEC, for the last 13 years and the last 13 months.

All of these data bases can be consulted by means of either a classical interrogation terminal or a Minitel terminal.

For **management** purposes, **over 20 data bases** have been developed. They make it possible to follow very closely the internal management of the Parliamentary Documentation and Information Printing Service, as well as the needs of various other Senate's Departments by registering all the Questure's decisions and publishing their yearly table, by describing the use made of all the different rooms in the Luxembourg Palace, by keeping a complete and detailed file on the Senate's personnel and even by automatic handling of the recruitment of certain categories of staff.

Since april 1983 when the first computer was installed in the Senate, a total of **more than 40 data bases** have been developed. They occupy a volume of over **1,3 billion bytes** (on magnetic disks). Their number has been multiplied by eight during the last two years.

Furthermore, since the beginning of 1986, an **electronic mail** system has become operational. It allows any person with a Minitel terminal to send and receive messages.

In 1987, the Senate's inhouse computer system has worked for almost 37.000 hours which may be divided as follows:

- 4.900 hours for interrogations,
- 7.600 hours for entering or modifying documents,
- 7.200 hours for interactive processing to develop new data bases or write new programs,
- 17.300 hours for batch processing which, for the most part, takes place at night.

B - Accessing to the information

The different data bases available on the outside serving centers as well as on the Senate's own computer may be accessed to through an internal network by means of classical terminals (teletype). Since october 1984, they can also be accessed to by means of Minitel terminals, with the deployment of a Videotex system.

1) Classical terminals (teletype)

These working stations (including screen, keyboard, printer and modem) equip the offices of the Senate's Services and political groups. They are aimed at a professional use of the various data bases which the Senate has access to. As of today, 66 teletype terminals allow complicated interrogations and fine quality edition when made on word processing machines.

2) Minitel terminals (Videotex)

Minitel terminals are terminals with a small screen and simplified keyboard which the French Department of Posts and Telecommunications provides free of charge to any telephone subscribers and which may be connected with a large number of public and private services.

By means of these terminals and through the different transmission networks, the parliamentary data bases available on the outside and inhouse computers can also be interrogated.

In may 1984, at the initiative of Mr. Pierre-Christian TAITTINGER, President of the Bureau's Delegation in charge of data processing, it was decided to equip volunteer Senators with Minitel terminals.

From november 1984 to october 1985, during a first development period, 125 Minitel terminals were deployed in the Luxembourg Palace. Afterwards, in october 1985, april and july 1986, three new development periods allowed the equipment of all the Senators with Minitel terminals. By the end of 1986, the 319 Senators had a Minitel terminal in their Senate's office.

As of today, nearly 500 interrogation terminals, teletype as well as Minitel, are set up in the Senate.

C - Permanent training for the users

Since april 1982, nearly 320 different training sessions have been organized in order to:

- explain the way the teletype and Minitel terminals function
- teach the users how to consult the data bases accessible through the different serving centers
- learn the specificities of a particular data base or information service.

These sessions have been attended by the Senators themselves, the Senate's and political groups' staffs and the Senators' personal assistants. As of today, over 700 people, including 95 Senators, have come to at least one teaching session and a total of more than 4.500 hours of individual training have been given to the users by the

Senate's Information Department.

For 1987 only, 62 different sessions were organized and almost 120 people (Senators, Senators' assistants, Senate's and political groups' staffs) took part in at least one of them.

More and more new people are trained every year, but it is also necessary to organize permanent sessions for the users who do not practice enough and forget the different interrogation languages. The increase in the number of teletype and Minitel terminals given to the Senate's users should allow more people to understand the necessity of using computerized information and therefore develop the need for permanent training.

CONCLUSION

The aims of the first development program approved by the Bureau of the Senate on october 29 1981 have been more than fully completed. The importance of the results obtained in the field explain the high reputation of the Senate of France as well as abroad. This is why the Senate's computerized information system is regularly shown to outside visitors who often ask for documentation on what has been achieved.

For the coming years, these aims will have to be maintained but also enriched. In order to plan this, a second development program is now being elaborated for the years 1989-1993.

The new development will concern:

- a better **integration** of the local and central systems,
- the extension and enrichment of the **local netware**,
- the use of **expert systems** for easier access to information,
- the use of **new technologies**, as for instance numerical optical disks for storing of information.

These new developments will contribute to improve the dissemination of parliamentary documents and the rapidity of access to an increasing volume of information.

In order to help the Senate fulfill its parliamentary task, adaptation to the new technologies and to the users' needs is now, more than ever, necessary. The Senate's Parliamentary Documentation and Information Printing Service considers that it is its main activity.

FINAL DAY PLENARY
WORKSHOP SUMMARIES

M. GASMI — ALDOC

We described and discussed the transfer of data, both arabic and latin, between CD-ISIS and MINISIS. The transfer of arabic data is done in the same way as the transfer of latin data with some additional steps related to how the two systems handle the arabic language. We discussed the difference between the two systems, particularly concerning how they handle, internally, the arabic character set, how they handle subfields, and how the data should be formatted in ISO 2709 before being transferred from one system to another. We discussed how to transfer the data and convert it from the 7-bit coded arabic character set to the 8-bit coded arabic/latin character set because MINISIS and CDS-ISIS differentiate between these two representations. After conversion, the steps are the same. When transferring data from CDS-ISIS to MINISIS, define a CD before running ISOCONV. We discussed the exits and programs in ISOCONV; the user has to mention the name of the exit related to the arabic character set transfer when using the ISOCONV processor to transfer arabic data. The same thing when the data is being transferred from MINISIS to CDS-ISIS. Routines for reformatting the data are available in MINISIS' user contributed library and are distributed on the diskettes with the CDS-ISIS system.

The second point we discussed was the arabic version of MINISIS Version G which is now ready to be distributed. We had some problems related to the HP arabic terminals; other than that, the majority of the bugs reported in Version F.02 were fixed in this version. The command levels of all the processors can now handle all the MINISIS commands in arabic, except the exclamation mark as a character string delimiter. We hope this problem will be resolved in Version H. A major problem persists with the DATADICT processor when you use the HP 2226 terminal. To use forms in arabic, we should use only the HP 2622 terminal, and it should have the option G06, option year 87, the reference is to 7 something. This is due to the fact, that the bilingual HP terminals handle the arabic data differently; it would be helpful if we developed a single version or standard and asked HP to upgrade its arabic terminals to use this version or standard. We also mentioned a solution adopted within the arabization of MINISIS, that is that the terminals and diskettes should be configured to 8-bit and set to underline=yes and when specifying fields, we should indicate they are unilingual or bilingual fields: use the unilingual field for latin strings, such as database, field, and file names, or account and group names.

When the data is stored on diskettes, it's justified only one way, in left mode. When data is entered as bilingual, latin or other, the field must be specified as bilingual. MINISIS does additional tests to see what happened in this field because of the different representation and handling of blanks in the two modes. Those are the major points discussed during the workshop.

COMMUNICATIONS SOFTWARE WORKSHOP
RUTA WITTAKER — Health and Welfare Canada

I'd be glad to provide you with a few details. During the communications software package workshop, several of the communications packages were presented during the opening remarks and, in particular, we discussed PRO-COM, KERMIT and CROSSTALK for the PCs while REFLECTIONS and ADVANCELINK were described for the Hewlett Packard system.

All packages seem to have given satisfactory results in the main functions of terminal emulation file transfers and information capture. It was generally agreed that in the case of file transfers, the binary transfer option worked best; in this manner it was possible to avoid imbedded characters. In the case of print format difficulties which might occur during file transfers the semi-colon attached to the labels command seemed to circumvent these. It was established that during ISO file transfer linked up have to be removed to allow for 8 column handling.

Communication speeds were also described. The most common still are the 1200 and the 2400 baud options, while the 4800 speed is now quite feasible and the 9600 baud rate is already being used in some networks and would be the best option for large file transfers.

At question was also raised regarding the transfer of object codes via DATAPAC lines, however, not many users had performed this option. Concerns were also expressed regarding transmission speed via DATAPAC lines or the packet switching network lines that are available in Canada. During the debate that followed it was established that communications support should be defined and that the logon procedure should be augmented by the expression TERM=10 or another appropriate number. Thank you.

THE MANAGEMENT OF VERY LARGE DATABASES
FRIEDA THOMPSON — NATIONAL ARCHIVES OF CANADA

The workshop Tuesday morning, entitled "Management of Large Databases" was well attended and proceeded despite technical difficulties. I discussed the experience of the Government Archives Division system, the growth from a single all-purpose database

designed in 1980, to the current structure of fifty-seven master databases, within excess of one and a half million records. The single largest of these databases contains three quarters of a million records, leading to a discussion of the BTREE limitation of the number of postings to a single key, which I understand Version G has solved.

I described the naming conventions across the fifty-seven master databases, fifty-four of which have an identical structure. The single procedures for string jobs used to produce reports from any one of these databases modified by the requester. The successful sorting nine keys within the MINISIS environment of the Index processor; the use of KSAM authority files for singling validation and the BTREEs providing all inversions. The use of the I/O menu system to provide access to the records to our archival staff who have no MINISIS training. This was not able to be demonstrated but works wonderfully.

The process which is now under way in our department is the bar coding of our holdings; a quarter of a million containers and their locations. This is being taking place now using the Renum processor to generate the ten-digit bar code numbers. The use of cross-account processing across three applications for our circulation system. I had distributed copies, or one page of each of our database dictionary, Data Dictionary, and file dictionary that we currently maintain on the Wordperfect file.
I have two thank yous to IDRC, one for a software which has user input regardless of how far removed we are from IDRC. It doesn't seem to be that many years ago that we spoke to Terry at North American Conference asking for more heading lines in print, and the second for hosting a meeting in Ottawa so that I could attend it.

MINISIS TRAINERS

JULIUS MANALO — Philippine Council for Industry & Energy Research & Development

Thank you and good morning everyone. There was a very lively discussion manifesting the concern by the user community with regard to the MINISIS training. Like changes in the software, the training has to be responsive to the requirements of the user community as well. However, the training program that's being followed right now, has remained relatively unchanged for the past eight years.

In summary, the following points were brought up during the session on MINISIS trainers: First one is the conceptualization stage, the training on the basic concepts. Training should be conducted on the basic concepts of Database Management at MINISIS, management prior to conducting actual training on the MINISIS processors. Second, perhaps it would be

better to develop training material and applications base training, rather than training on the MINISIS processors and commands. Third, to conduct selective training based on the level of usage, and in this training to focus on the 20% of the MINISIS commands that are going to be used 80% of the time, rather than teaching them everything which, is just going to be more confusing for everyone. Fourth, the training should be broken up into a more manageable thesis, rather than having it on a consecutive three-week format, to allow users time to absorb what had been learned. There were a number of requests for enhancements, perhaps, which can be included in Version G or H, and these include an on-line HELP and an on-line tutorial or a self-training package; additional audio-visual training material and the distribution of training material in the MINLIB and COM. Thank you.

THESAURUS APPLICATIONS
BOB M^{C}KERCHER — IDRC

The "Thesaurus Applications" workshop had presentations from Bev Chataway, Maureen Sly of the IDRC library, Witold Merkis of McLeod-Bishop, and Ron Davies, an independent information systems consultant in the Ottawa area.

The highlights of the workshop included discussions of Thesaurus management and user perspectives at the IDRC library using the OECD Macro Thesaurus, in which we heard about the difficulties of managing a Thesaurus, of introducing new terms to a Thesaurus, the organizations required in terms of people and the committee approach to the addition of terms. There was some discussion of searching using Control Vocabulary vs. Free Text, with Control Vocabulary giving greater precision while Free Text provides for greater recall and requires a greater knowledge of the database. These are fundamental Information Science issues, which are at the heart of the use of control vocabulary. There was a comment that the use of the Thesaurus provides a requirement for greater training of the end user. We had some discussion of utility for the dynamic updating of the Thesaurus called "Q-Thesaur" which has been developed by McLeod-Bishop. One of the points that was raised was the difficulty of adding new terms because Thesaurus update must be done in batch mode and the entire Thesaurus has to updated at a run. The Q-Thesaur program which allows dynamic update and automatically structure terms and inverse terms is now available in the user-contributed library.

There was some discussion of the validation of using the Validation and Thesaurus structure in the management of organizations and organization names and some comments

about the kind of relations and organizational names which is broader term, narrower term, any term, related term which lend themselves to Thesaurus-type organization.

Some of the suggestions that were raised during the session about improvements that might be made to the MINISIS Thesaurus facility were requirement for left truncation in the Thesaurus, an ability for KWOK structure in Thesaurus terms. This is something that has come up in other workshops as well, is an ability to do some linking of subterms or additional term descriptors. Another request is for selection of valid terms by number during data entry, something that was termed "point and shoot", a listing of terms of numbers and then just pick a number to get it entered.

There was a request for more intelligence in the front end for searching that would retrieve information using culmination of key words and controlled vocabulary. If nothing is found under Thesaurus terms, a request for a spelling checker of some sort and a request for the ability to search for thesaurus terms by key words.

MENU DRIVERS
MR. B.C. KYLIE — INDIRA GHANDI NATIONAL THEATRE OF THE ARTS
Summary delivered by Bob M^{c}Kercher — IDRC

The Menu Driver workshop was chaired by Mr. B.C. Kylie of the Indira Ghandi National Theatre of the Arts in New Delhi. Mr. Kylie is not here to give an overview and so I'm substituting for him.

Menu drivers are something that the users have been developing and have been telling us in the most convincing way that this is lacking in MINISIS. We have four menu drivers now that we've seen demonstrated and when the user spends so much time developing an application of their own this is of course an indication that this is somewhat that's widely needed. We saw menu drivers that could take the user from outside of MINISIS deep down into MINISIS in the Query Processor and actually handle the submission of Query terms to the processor and display records. We saw menu drivers that allowed the user to graduate to a more sophisticated operating mode once they had become more familiar with the bullion operators and so we're not frozen into the menu driver but could in fact go beyond it.

I saw menu drivers that were implemented as terminal handlers and so this brought the question "would it in the future be possible for one device to have more than one terminal

handler, for example where a terminal handler is used as a menu driver and there is also a requirement for alternate character sets. We saw evidence of menu drivers with free form user-defined menu design, menu systems which could both display text as such as HELP-TEXT and execute commands, menu drivers that are provided for cursor-control and screen manipulation such as to clear the screen. Menu systems for, we were told, the implementation of menu systems considerably relieved the reference task in a library so that end-users could find out more for themselves without having to go to the reference desk. We were told that flexibility in a menu system is highly desirable because often several versions had to be implemented before end users were satisfied with it. We were told that where news bulletins were implemented in menu systems, there was a need to staff the updating of these news bulletins and that added to the labour costs of menu driver implementation. We were told that on-line user surveys are useful in determining user satisfaction. We were told that more than one documentation is often required for menu drivers for the sophisticated frequent users and for the less frequent users. We had requests for hardware interface modules and public network interface modules, for example, to outside database systems such as DIALOG, commercial database systems. We saw a menu driver demonstrated that shower field and value selection by number and, this is the same as the "point and shoot" method that was discussed in the Thesaurus session. We heard one delegate mention that Query by example or form-filling might be a useful form of menu driver to implement.

THE TRANSFER BETWEEN MINISIS AND FOREIGN DATABASES

BOB M^{C}KERCHER — IDRC

The Transfer of Form in MINISIS Database session, there was presentations by Henry Holmes from the Canadian Centre for Occupational Health and Safety, Dr. Franz Leemreize from the Agricultural University of the Netherlands, and from BIREME's Abel Packer.

This was a essential a discussion of the Isoconv Batchin processors and, we saw evidence that those processors are being put to very heavy workloads with very large databases. For example, the Registry of Toxic Effects of Chemical Substances which the Canadian Centre for Occupational Health and Safety has mounted on-line for access Canada-wide with 97,000 records. Abel Packer told about his mounting of the Medline Database with millions of records, a huge database which has caused us to increase the way a physical master file

is handled in MINISIS to implement segmenting of the master file, which requires records larger than 4K. We had some requests for improvements to MINISIS for the handling of foreign databases. We were asked if it would be possible to add qualifiers to descriptor terms.

The context was for Medline mesh terms, but, this again, was something that has been mentioned in the Thesaurus presentation, some kind of qualifier to descriptors. In library terms, perhaps, an implementation of some kind of faceted descriptor term. We had a request for a choice of bullion operators in index user exits. What happens now is when word processing is implemented in the user exit the terms are anded together and it was suggested that some choice of an OR operator or some other operators might be possible. We were told that when using print to produce a Batchin file for transfer of files there are still difficulties with blanks between words that are adjacent but which are separated by carriage returns in lines feeds, in other words, in successive lines. We had problems with line feeds and carriage returns when transferring with DBASE III. In DBASE III, apparently, there is a requirement for the ability to specify an absolute number of occurrences of a repeatable field. For example, DBASE III expects 16 occurrences of a repeatable field, no more and no less, and it has difficulty handling a different number. And we also had a request for print to handle an output of more than 250 characters to be used in the creation of transfer file. We had a request for Isoconv to process binary data. In other words, users would like to see Isoconv support some non-ISO 2709 data. We had a request for better air messages for Batchin. The case that was mentioned was where keys could not be written to an inverted file for some reason, and there was no report of the record number or the field that was involved. That's it.

THE NATIONAL LIBRARY APPLICATION OF MINISIS
VIRGINIA BALLANCE — NATIONAL LIBRARY OF CANADA

Anne Barkworth from McLeod-Bishop Systems and I made a co-presentation of the MultiLingual Biblio Services Integrated Library System. It included an on-line demonstration. After a brief introduction to the Multilingual Biblio Services and its work, we discussed how the automated system was designed to meet the needs of the Multilingual Biblio Service in ordering, cataloguing, processing, and circulating books in the 28 languages of the MBS collection. We explained how the MBS MINISIS application uses terminal handlers as well as special terminal and printers to store, to print and display an over-extended Roman character set. I use the expression "over-extended" to mean all accents and special characters used in Roman script languages. We showed how special characters were

designed, entered, and displayed. We also discussed our plans for the future, which include the use of a Macintosh PC to process non-Roman, or non-Latin scripts. Thank you very much.

CD-ROM IN THE MINI MICRO-ISIS ENVIRONMENT
ABEL PACKER — PAN-AMERICAN HEALTH ORGANIZATION

In our presentation, we described the Pan-American Health Organization project. The use of CD-ROM as the more adequate medium to distribute the Health-Related Bibliographic Databases in Latin American and Caribbean. The main points that I'll describe was: the project, include the purchase and the distribution of the 150 CD-ROM readers to the centres of Latin America that are linked to BIREME's and CEP's networks.

Second, the production of a CD-ROM with a database. The database includes the LELAX databases, the CEPs databases and the orders-related databases like the source and journals collections. We discussed also the CD-ROM as an adequate medium to distribute information to Latin America because of the problem that the countries have to maintain mainframe computers or to access external databases in on-line. The data that you will put in the CD-ROM are first prepared in MINISIS and then exported to CDS-ISIS. Amer-Indian data CD simulator has been used to prepare the final tapes. Sort of large league files was done in an IBM and mainframe computer. A special interface in that tutorial was developed over CDS-ISIS to help non-experienced users. From this experience a new version of CDS-ISIS is coming up. We are just finished the distribution of this first edition, and the feedback of the users are positive.

ON-LINE COMMUNICATIONS
NICK COP — IDRC

The workshop opened up with trying to define what type of information was really needed to be communicated between IDRC and the MINISIS users. It was generally felt that it was bugs in the resolution and some type of applications help, for example, connecting to another user in trying to resolve or trying to help him with his databases. The problem with on-line communication, of course in some countries it's quite great because on-line is very difficult to do because of poor communications systems or very high cost. So we went through the existing communications systems, first without going into on-line. One of the

more popular systems which are coming into style now is the FAX, which we discussed is a cheap way of transmitting information and a good way to enhance information that is currently being sent by TELEX and by telephone. With the FAX people can send their database definitions, they can send diagrams of what the application is to give us the better idea of what's happening. So I asked in the session for users to give IDRC their FAX numbers, those users that do have a FAX machine, if they could give to anyone in the Computer Systems Group, their FAX numbers before the meeting is over or, to send it by mail. The IDRC FAX number, if you have your pens and pencils ready, is (613) 238-7230.

Another popular way of communicating with the CSG group, is electronic mail systems. And one which we use quite a bit is the Envoy 100 electronic mail system. If people are interested in communicating with us through that mail system, what they need to do first is get access to our packet-switch network. If you could tell us of your interest, then we could put you on the Envoy 100 System.

Another means of communications that we discussed was connecting directly, terminal to computer, be it user's terminal to IDRC computer or, a terminal from IDRC connecting straight to the user's computer using the packet-switch network. We have already tried out experiments with users connecting to us, and us connecting to them to do so-called remote support; and IDRC has also started to experiment with an electronic mail system on its own computer, so those people who can connect through the packet-switch network to the IDRC computer could in fact use the electronic mail system on our machine to send messages. This electronic mail system is still in the process of experimentation. Those people who are interested in being involved in the experiment, if you could approach anyone in the computer group, and ask us for our DATAPAC access number. I think that was pretty well it. Thank you.

THE USE OF MINI-MICRO CDS-ISIS WITHIN THE MINISIS COMMUNITY
MR. PANG — USM

In this workshop, it has been reported that there are about 3,000 licensed CDS-ISIS users in the world. Apparently there also many MINISIS users who are transferring data between MINISIS and CDS-ISIS. The following comments regarding the use of the CDS-ISIS software has been highlighted: First one, more assistance or training required in using the CDS-ISIS package, and also for the transfer of data between CDS-ISIS and MINISIS. Number two, the CDS-ISIS manual is not comprehensive enough as it is understood that UNESCO do not have the resources to produce a more detailed manual. Suggestions for a

third party to produce a more detailed manual was discussed. A third point: requests for IDRC to serve as a clearinghouse for any useful programs on databases that have been created based on the CDS-ISIS software.

The following have also been reported: SCMDT Women's University reported that they have established some standards in defining CDS-ISIS databases; they also provide some training in using this package. MINISIS users from ALDOC reported that it is possible to transfer ... in the two systems. Some enhancements have been made in Version G for uploading and downloading of data between CDS-ISIS and MINISIS. That's all, thanks.

CHINESE CHARACTER SET PROCESSING
RICHARD LEE — IDRC

The Chinese Character Sets workshop was held yesterday morning and we discussed the concept behind alternate character set processing, and also we discussed the difference between the conformable character set and the non-conformable character set. Basically, Chinese character set interface is just a shell of the MINISIS call system, which consists of setting up tables and writing up procedure. We also talk about the posts and columns of increment Chinese I/O device. Finally, we discussed the simple Chinese interface which you will find in the MINLIB account, and currently Version G supports the PRC standup, and also the telegraphic code standup, and also the HP Taiwan standup.

PROGRAMMING IN C LANGUAGE
RICHARD LEE — IDRC

I also chaired in a workshop which is on the programming interface in C, PASCAL and COBOL programming language. During the meeting, we discussed the program architecture of the HP 3000 system and compared with the program architect between the HP 3000 and the 900C Computer. Also, we compared the data type which is used in different programming languages. Also we discussed the high level intrinsic and the philosophy behind the high level intrinsic and, finally, we discussed the programming language SL, and apparently, at IDS they have tests on the COBOL language, PASCAL language, C Language and SPL language. Also someone brought up the question of whether MINISIS will be able to program with FORTRAN and BASIC and, we feel it will be very difficult to program in these two languages. Thank you.

FINAL DAY PLENARY
WORKSHOP SUMMARIES

GENERAL SESSION
BOB M^{C}KERCHER — IDRC

We had presentations from Mr. Neidu of SNDT Women's University in Bombay, Mr. Kuhl from the National Council of Higher Economic Research in New Delhi, Mr. Hwang from the Asian Vegetable Development Research Centre in Taiwan and Mr. Tazi from the Conseil de Ministère de la Justice in Rabat, Morocco. Just some of the points that were raised. In SDI there's a problem when the data file is a DS; there's a request for better wordprocessing capability in the front end for data entry; a request of some sort of semantic or syntactic analysis in the Query processor, in other words, kind of moving towards an artificial intelligence-type thinking. This also was a point that was raised in the Thesaurus workshop: need for a better off-line data entry facility, and in fact we saw it demonstrated by Mr. Kuhl, a full-screen computer data entry facility; a better need to handle, or a need to handle Indian language character sets; and a need for either better desktop publishing-type capabilities in print or an interface to desktop publishing systems by print. Just one...that was all I wanted to say about that session but I just wanted to also mention in the "Menu Driver" session the presenters Dirk Janssen, Witold Merkis, Ron Wilde's and Mr. B.C. Kylie.

LEGAL AND LEGISLATIVE APPLICATIONS
MARY CAMPBELL — IDRC

During this workshop, representatives of several organizations, the World Bank, the Le Sénat Français, the Centre d'Informatique Juridique of the University of Lebanon and the Conseil du Ministère Arabe de la Justice, talked about their applications, their requirements for their applications of their legal and legislative data and we came to the conclusion that the particular requirement of users of this type of application is for some way to process and make available large amounts of texts, in other words to make the text of the article or the piece of legislation available to the user while the user is searching. The World Bank does this by using the MENU-DIS, menu driver, derived by USAID, to link, as far as the user is concerned, to the database and references to the article with an ASCII file on the disk that holds the text on the article. MENU-DIS menu driver is part of the user-contributed library. The other organizations handled these large amount of texts by again, linking one database of references to the article with another database which will

hold the article itself using DS instructions to allow the user to see large amounts of texts at a time.

It was agreed that there are two particular requirements, two particular problems that the user of such an application has to be aware. One is the importance of making sure that the data, the text, is accurate, since a missing word for example, can significantly alter the meaning of the text. A second one, was for better requirements in MINISIS to interrogate large amounts of texts, and in particular the representative of Le Sénat Français repeated some requirements that he's submitted already for more powerful adjacency operators, proximity operators, where you may be looking for two key words within a certain proximity, not necessarily adjacent; some sort of paragraph operator where you can specify that you want to find a word within a paragraph, or you want to find a word between a starting point in the text and an ending point in text. And again, the representatives of these applications at this round table ask IDRC to look into these possibilities and make it easy to interrogate as a document itself. All of these people, all the people at the meeting are permitting their users to search by key word descriptor, searching in the bibliographic reference to the text itself and they would like to get into the text and the article itself and be able to do word searching. At the conclusion of the workshop the representative of the Le Sénat Français offered to make information available about his application to any other user who's contemplating such an application.

MARC APPLICATIONS
ALAN HOPKINS — INSTITUTE FOR DEVELOPMENT STUDIES

The aim of the MARC APPLICATIONS workshop was to introduce participants to the way both Versions F and G enabled MARC to be implemented, bearing in mind that compatibility with MARC requires only a MARC exchange tape to be produced and there are many different ways in which MINISIS can provide this. During the workshop, data entry for both fixed- and variable-length fields, Modify, and Query and Modify were demonstrated using the Institute of Development Studies' implementation on Version F, and various features of the MARC table were outlined and discussed. One of the questions raised was whether is it was possible to avoid the cataloguer entering MARC-type subfield identifiers in the text, and Ellen Ruygrok, of the MINISIS team, described that Version G would enable that, so long as subfields were not repeatable. Other problems were solved on the help desk, late in the afternoon.

REGIONAL USER GROUPS

Mohammad Gasmi — Documentation and Information Centre of the Arab League — ALDOC

En tant que réprésentant d'un Centre Ressource pour MINISIS, je voudrais tout d'abord remercier le CRDI pour l'esprit de coopération qu'on a eu durant ses longues, quatre dernières années, et c'est grâce à cette coopération que nous arrivons actuellement à satisfaire la communauté des utilisateurs dans la region.

Je voudrais ouvrir une petite parenthèse ici et faire un appel que j'ai déjà eu l'occasion de mentioner lors des précédents réunions du MINISIS.

C'est appeler les organismes dit, utilisateurs avancés de MINISIS dans les pays développés et je peux mentioner quelques-uns, vu l'amitié qui nous lient à certains de leurs ...., par ici je prends l'exemple du BIT, je prends l'exemple d'AGRALIN, je prends l'exemple de toutes ces institutions qui développent certaines choses qui devraient, dans leurs lignées politiques, un peu avoir cette orientation, qu'a MINISIS, puisque c'est destiné à aider le recherche dans les pays en développement. Les gens ont souvent besoin de certaines petites choses, surtout d'utilitaires qui servent et ces institutions devraient tenir dans leur lignes de conduite, un peu cette esprit de coopération.

Le groupe d'utilisateurs arabe, vous savez, a 22 pays membres et actuellement, il y a 41 utilisateurs dans les pays arabes, de MINISIS. Chaque année, nous organisons une réunion annuelle, le but est de surtout orienter d'échange d'expérience et de résolution de problèmes techniques qui se posent aussi bien pour la version arabe que pour les problèmes de MINISIS en général.

En juin dernier, nous avons le troisième réunion annuelle, c'est à dire que maintenant c'est trois ans de suite que nous organisons cette réunion. Elle a eu lieu à Baghdad le juin dernier. Quarante participants étaient présents et qui réprésentaient quinze institutions, utilisateurs de MINISIS dans la région arabe. La réunion a durer quatre jours, une journée en session pléniaire comme celle-ci et les trois autres jours étaient vraiment des ateliers techniques et des simulations des problèmes qui étaient posées pour les gens. En fait, le but de ce genre de réunion est un peu l'échange d'expériences et surtout, s'entraider mutuellement à trouver des solutions pour les problèmes techniques qui se posent aux institutions membres. Une certaines nombres de recommendations, du groupe d'utilisateurs, qui nous ont chargés, qui ont chargés ALDOC de vouloir transmettre à cette réunion.

Beaucoup de recommendations qui ont été mises, rejoignent et en fait, quelques recommendations qui ont été exprimées ici, mais, l'action a été mis sur la nécéssité d'une meilleure organisation au sein de la communauté des utilisateurs de MINISIS en arabe et surtout sur front national et ceux par l'appel à la création d'associations nationales dans chaque pays pour mieux aider les utilisateurs isolés à faire face aux problèmes rencontrés dans les applications de MINISIS.

Notre recommendation était d'appeler le CRDI, et bien sûr, ALDOC à organiser plus de cours avancés sur MINISIS dans la région et de demander à ce qu'on revoit un peu les modalités de l'organisation de ces cours avancés, car le but est vraiment d'assurer que dans un pays, il y a des problèmes qui se posent, il y a quelque part, soit une personne, soit une institution qui puisse aider directement à la résolution des problèmes qui se posent.

Pour le matériel de formation, il y a beaucoup de réclamation d'avoir un matériel de formation, de plus en plus sur support, soit audio-visuel, soit comme on dit, on-line, directement avec MINISIS, un support de cours de formation. Aussi, il a eu une recommendation concernant la version arabe et les problèmes qui se posent. Sur le plan hardware, étudier la possibilité, avec IDRC, ALDOC et avec HP. Comment peut-on évoluer dans l'avenir, surtout des terminaux bilingues, et qui ne sont pas adéquats actuellement et qui posent certaines problèmes, et si on veut voir MINISIS se développer, et en même temps développer la version arabe, il faudrait que Hewlett Packard aics une intention claire sur les propositions qu'ils vont faire à développer le matériel bilingue dans l'avenir.

Ron Wiles — USAID Documentation and Information Handling Facility

The Washington D.C. Users' Group is probably an example of how small you can be and still have a need to get together. We were formed with the World Bank, about two years ago we got together the U.S.A. World Bank and we realized that we're very few among many dataprocessing people in the area. MINISIS is still...there are only seven installations in our area and we found that we had a lot in common and a lot to bring to one another but we found ourselves quite different. Some people wanted to know more training information, some people wanted to know more system management kinds of information, some people use MINISIS with nothing else on the machine, some people use MINISIS and had to fight the dataprocessing manager for consideration because they were doing other things on the machine, and some people didn't even use the machine and that's just seven of us. We haven't met for some time, we've been waiting for Version G, and with Version G I think we'll be back together again and maybe share our experience converting with Version G but, I think just being together and knowing that we'll be getting together

and exchanging phone numbers and we made some friends that probably have had their own informal user meeting since, USAID and the World Bank have actually collaborated on an enhancement to software, and that kind of thing came out of just getting together. I'm recognizing Elvane Silva when I do that and I think that we also provide a form by getting together for our distributor, or yourselves to come see us. We can bring us all together and make your trip real worthwhile.

(In response to a question) The frequency is, as I say, we formed two years ago, and the frequency was quarterly when we formed. That got to be too excessive because we had made friendships and exchanged phone numbers and when we needed to meet together individually, we did. However, turnover has caused rationale for continued getting together I'd say of out eight installations, three of them now have significant changes in personnel so, that hasn't answered your question but, initially, you'll want to meet quarterly and probably plan on your second year, maybe twice a year, or even annually. Format, you're going to have to address both the training interests and the system management interest, and we try to do that all in about an hour for one and an hour for the other, and try to do it in a way that's interesting to both sides.

Jean-Louis Schroedt-Girard

M. le président, je voulais vous signalé que les utilisateurs français sont regroupés au sein d'une association d'utilisateurs de MINISIS en Europe. Cette association a été constituée depuis 1986. Elle compte actuellement une dizaine de membres, et devront en compter quinze avant la fin de l'année. Elle est composée principalement, donc essentiellement, actuellement d'utilisateurs français, mais, elle est ouverte à tous les utilisateurs de MINISIS en français installés en Europe. Elle se réunie, en moyenne, deux à trois fois par an, pour permettre la présentation à chacun des utilisateurs intéressés de réalisations effectués sur MINISIS dans un ci-donné. Elle a déjà constituée des sous-groupes de travail, des groupes techniques de travail pour suivre des problèmes particuliers, et principalement, à des produits développés autour de MINISIS par la société Dataware. Elle a mis au point un système de messagerie électronique qui permet à ses membres de communiquer très rapidement et d'obtenir des informations qui leur permets de résoudre des problèmes. Elle est aussi l'enceinte dans laquelle se décide des projets de co-financement par plusieurs utilisateurs français de développement autour de MINISIS.

Elle est aussi en quelque sorte, elle joue le rôle d'un groupe de pression sur le distributeur de MINISIS en France, d'information de l'ensemble des utilisateurs, et elle serait ravie

d'ailleurs, d'entretenir des relations avec d'autres groupes d'utilisateurs à travers le monde de manière à envisager là aussi, des informations mutuelles, voire des actions communes.

Maarten Hoolbloom — Agriculture University of the Netherlands

The MINISIS users group of the Netherlands (MUN) consists of the following members: The Dutch Broadcasting Organization (NOB), the International Reference Centre for Community Water Supply and Sanitation (IRC), the Ministry of Foreign Affairs, the Province of Hatherlands, the Royal Tropical Institute, and the Agricultural University of Wageningen.

The MINISIS Users' Group of the Netherlands have discussed the new Version G during their meeting of September 1, 1988. There was a strong feeling of appreciation for the significant advances and improvements that are going to be achieved in this version. The group is looking forward if the release tape. Meanwhile, we have a few suggestions for further improvements, focused on the ability of MINISIS to compete with other database systems on the market, knowing very well that MINISIS already has specific characteristics that are unique in the world of database management systems today. Suggestions for further improvements are the following: First, for the SDI processors, floating stem search, the possibility to have left and right truncation on one key. The second, in the DataDictionary, including jobs and print format information, the possibility of cross-reference information from jobs, or out-of-jobs or out-of-print formats, like used jobs, used keys, used databases, etc.. The third, the expiration date to be abolished. The presence of an expiration date is not appreciated by the MUN. This feature has disturbed some of the MUN installations severely, recently. The last one, a comeback of the MUG proceedings. The MUG proceedings have always been very useful for the members in order to be informed about new developments in the MINISIS user community. Please bring this tradition back to life again. Thank you.

Colin Townsend — M^{c}Leod-Bishop Systems

McLeod-Bishop has operated user group meetings, we've had quite a number in fact, in the last five years. I suppose we call them MBUGs for our sub-licensees in North America and indeed, we'd be delighted any of those who wanted to come from Scandinavia or Australia but so far, we haven't had any attendees from those regions yet. So, in one sense we're an international group of sub-licensees. We didn't hold one last year, the primary reason being that we were expecting Version G to pop out at any moment, and we thought we'd wait

until it did come before we held our meeting, and we waited, and we waited, and we waited, and eventually we decided that we had waited too long, and the best thing to do was to wait until this meeting and of course, it's much more interesting for us sub-licensees to have the opportunity to attend this meeting and, of course we take the opportunity to meet with them at the same time.

One of the issues that will be raised at that meeting this afternoon is in fact a proposal to create a local user group for the Ottawa-Montreal area, and this has been proposed by some of our users, and I think that's it long overdue, and we have 13 users, 13 sub-licensees of McLeod-Bishop here in Ottawa, plus a couple of sub-licensees to IDRC, and another 4 or 5 in Montreal and that, I think, is certainly a large enough group to establish a very viable local group session. We would obviously hope to follow the examples set by the users in Washington and other regions of the world by holding perhaps quarterly or bi-monthly meetings of those organizations.

FINAL DAY PLENARY
WORKSHOP SUMMARIES

MINISIS VERSION H

TERRY GAVIN AND RICHARD LEE

(In response to questions)

On Monday, Richard made a presentation of some of the technical enhancements, the background of this activity; the features that will appear in the MINISIS software in the future; the programming environment; and the applications development tools and migration tools that will be made available. One thing I would like to emphasize, that may not have been emphasized strongly enough on that first day is that, all of the features that we have talked about, will not appear in Version H.00, when it's first released. What you see at that time will be software that will be very similar to what you see in Version G. There may be some enhancements, but they will not include all of the features that we have gone through in our various presentations. What we want to do in Version H.00 is to ensure that there is a version of MINISIS that will operate efficiently on all HP computers. This will be a C Language implementation of MINISIS that will run efficiently on the existing HP 3000 family and the new 900 series machines. Also, we will include the first version of an Application Development Language that will make it easier, we hope, for people to develop new applications using the MINISIS software. Version H.00 may also include some other features that we can talk about. What we are trying to do is to build the framework for the inclusion, over time, of all of these other features that we have talked about. I think it's become obvious to many of you during these discussions that there are many features that people want to see in the MINISIS software and many of those cannot be accommodated in the software as it exists currently. Therefore, it is necessary for us to do some modifications both to the internals of the software and user interfaces. That is one of the major objectives we have in undertaking these Version H.00 activities. You've heard our presentations, you've had a chance now to read and digest the outline that Richard provided Monday; you've had time for discussions during the various workshops and the informal discussions that we've had at coffee and at cocktails, etc. We'd now like to hear from you about some of the things that you would see in Version H and beyond; keeping in mind that some of the features that we talked are not going to be in H but I, J, K and may not appear until Version X.

But keep in mind that some of the features of MINISIS that we've described may not appear until subsequent releases of the software. It is going to have to evolve, just as MINISIS has evolved from Version A through G. With Version H we want to ensure that the basic groundwork is there so that we can enhance MINISIS over the years. We would like to get some additional feedback from you about your concerns, your feelings about Version H, things that you would like to see in the software in the future.

QUESTIONS

(W. Merkis): Yes, my name is Witold Merkis with McLeod-Bishop Systems in Ottawa. From your talk on Monday it was quite obvious that your first commitment is to HP 3000 users and I think that's an obvious direction. What wasn't clear, certainly to me, was your relative thrust or timetable as such towards other machine users, specifically DEC, and perhaps the PC World. This is illustrated by the fact that just yesterday I received a call from somebody at Digital wondering when MINISIS was going to be running on DEC machines, so news travels very quickly. Realizing your commitment on the HP 3000, I wondering if you expand a little bit on perhaps how you might treat the other machines.

(Janice): I just want to ask Richard if he could clarify one point and then ask a general question. You had written in terms of migration that exits would not function properly under Version H except high-level user exits. Does that mean user exits which have been written with the high-level intrinsics?

RESPONSES

(T. Gavin): I'm not going to be able to say right now that MINISIS is going to be able to operate on machine X on such and such a date. During the implementation phase of Version H, some of the software will be developed on the HP 3000, some will be developed on IBM-PC computers. We hope that this will result in a very fast and easy migration from the HP version, to a microcomputer version of the software. I must hasten to add that in that first microcomputer implementation of MINISIS you should not expect sophisticated use of windowing or some of the features that are very prevalent micro-computer software. The first release will most likely be just a straight migration. The implementation of MINISIS on other hardware after that will depend entirely upon the assistance and support we can get from other collaborators. It is completely impractical to assume that IDRC is going to be able to develop and support versions of MINISIS on all varieties of machines.

For example, if there is a community of users that is very interested in having software such as MINISIS to run on a particular variety of hardware, then we are more than willing to talk to you about how we can work together to ensure that the software gets there.

(R. Lee): What I mean is that, under the Version G there are two interfaces. One is an SPL interface and the other is a high-level intrinsics interface. I mentioned it yesterday during the Programming Interface Workshop, if exits are written in COBOL, or in PASCAL or C, you will be able to use under Version H.

QUESTIONS	RESPONSES
(Janice): Thank you. The second one is à propos of Version H. Is there a priority list of what will go in when, and can users influence that list?	(R. Lee): As Terry mentioned earlier... just for sure the applications you've learned, two of them will be part of the system. As far as other features, I guess we'll have to make a survey and decide which is the mostly wanted by the user. (T. Gavin): But to answer the second part of your question, yes it is possible for users to influence that list but we want to maintain to the degree possible our responsiveness to users. However, we have to be realistic, and we will not be able to juggle priorities during the implementation phase, but we are certainly prepared to listen to what you want to see in that software.
(M. Holbloom): I am Maarten Holbloom from Agricultural University in Wageningen. My question is when do you expect to give information about how to change user-written exits and user-written processors, so that they are compatible with Version H.	(R. Lee): I think there's a new section in the Applications Programmer's Guide in Version G documentation and it describes how to write those exits and programs.
(M. Holbloom): And that's Version H.	(R. Lee): No, okay. You must mean writing programs. As I mentioned in the Monday presentation, all the Version G applications that are written with the high-level intrinsics will be able to run on H. So there's no change if applications are written in such a way, you can move data into H.
(M. Holbloom): Even if they are written in SPL language.	(R. Lee): Yes.
(M. Holbloom): Okay, thank you.	(T. Gavin): And as Richard mentioned, that documentation for those high-level intrinsics is available in the Version G documentation.

QUESTIONS	RESPONSES
(T.K. Johnson): Tony Kopp Johnson from the National GeoScan Center. I've been asked to include in this in our request for things we'd like to see in H. Would it be possible to include diagnostic programs similar to TESTUPLE and some of the other error-checking programs that there are in the user-contributed library in Version H at some implementation. Programs such as TESTUPLE have saved our bacon more than once in detecting errors caused by hardware going sour on us during restores and reworks on the machine.	(R. Lee): I think it's a good idea, but probably you won't see it in the first release of MINISIS, the Version H. Definitely, we will include it into our design. (T. Gavin): I would just like to make a comment on the original development of MINISIS. There were in fact, up until Version F of MINISIS, or maybe it's still there, a routine called FIXXREF which was originally written as an in-house diagnostic tool when we were developing the first version of MINISIS. I think what could possibly happen during the developments of age if such internal tools were developed for our own purposes that they would certainly be made available through the user-contributed library. But I don't know if you'll see in Version H, as Richard said, those diagnostic tools included as specific features within the software itself.

QUESTIONS	RESPONSES
(C. Townsend): A quick question. How realistic is the time scale you've given us? It seems to me to be very sanguine to have a completely available system within what are we saying, two years. I would like to have some sort of feeling from you as to how positive you feel about that date.	(T. Gavin): We're very positive. We're confident that we can do it in that time period. When you think that the first version of MINISIS was completed by two people working for a full 18-month period and then a third person joining the group for the last 8 or 9 months, approximately 45 person months. When we had no expertise at all in writing software for these types of applications and we had to learn new hardware, new techniques, everything. For this particular activity we have far more than twice as many person-years dedicated to that activity; in addition we have expertise with these types of applications that we are trying to support and the software to support those. We also have our experience with MINISIS to draw upon. In addition, as Richard mentioned on Monday, we feel very confident that the internals of the software are still sound, the basic database management system is still fairly reliable. It still has a lot of life in it. So, it's not going to be a complete rewrite of all portions of the software. The major changes will appear at the user interface level. We are also very fortunate that we have received the assistance of the Hong Kong Productivity Council in developing this software, and they've demonstrated their ability to provide very talented people. So we're very confident that we're going to be able to meet our deadline. We hope that we will be able to work with other members of the user community to work on other parts of the implementation as well, in the future.
(Jean-Yves): Oui, j'aurais trois questions M. le Président. La première tomberais à préciser un peu la réponse qui venait de faire au précédent intervenant, en vous demandant de détailler, si cela était possible, les moyens de vous envisager, de consacrer au développement de la	(T. Gavin): I'm not sure that I'm going to be able to respond in the order in which you have asked the questions so maybe we will do the easiest one first. The enhanced searching capabilities, adjacent, more sophisticated searching capabilities within large text

Version H. Vous avez loquer, je crois la participation de 6 personnes pendant deux ans à ce développement. Pourriez-vous nous préciser leur répartition. Lundi, Richard Lee et vous-même aviez citer la société de Hong Kong qui devait vous aider à l'élaboration de cette version. Pourriez-vous nous préciser, aussi, quel serait la nature de cet aide, la forme de cet aide. Enfin, pourrions nous avoir une idée du budget globale que vous envisager consacrer au développement de cette Version H. Ceci étant ma première question. Vous préférez me répondre maintenant et que je pose mes questions ensuite, ou vous préférez que je pose toute mes questions à la suite. La deuxième question c'est de savoir en ce qui concerne le portage de la Version H sur d'autres machines que la gamme HP3000. Vous envisagez avant 1990 de faire collaborer soit des constructeurs, soit des communautés d'usagers, soit des sociétés de service à l'élaboration de ces version portables, car je n'arrive pas très bien à comprendre pourquoi vous attendez 1990 pour envisager une extension du part de matériel sur lequel le Version H pourrait être installer. Troisième question, mais beaucoup plus ponctuel, qui reprends d'ailleur une des préoccupations du groupe de travail informatique MINISIS et la documentation legislative et juridique, et qui reprends d'ailleur une des préoccupations majeures du groupe des utilisateurs français dont j'ai fait la présentation tout à l'heure. C'est de savoir à quel horizon vous envisagez de mettre à disposition les utilisateurs de MINISIS, leurs opérateurs boulliens qui permet de retrouver dans un document en texte intégrale, tous les documents, enfin dans une base de données en text intégrale, excusez moi, tous les documents comportant deux ou plusieurs mots figurant entre deux points. Car, je tiens à souligner

applications is something we will be providing in Version H of MINISIS. The use of other collaborators to develop other hardware versions of the software of MINISIS is not something that is going to wait entirely until the end of 1990. But before we enter into serious discussions with other organizations on those aspects, we want to ensure that we have a definite set of specifications available to implement. From that we will be able to identify those features that we feel are machine-dependent and will then be able to speak more concretely to other organizations that are prepared to collaborate with us.

With respect to the distribution of resources for the development of MINISIS. We have at IDRC three people within the Future Systems Group that will be working on the software development, on the actual implementation. That may be supplemented by one other person in the future. We have in addition to the staff of IDRC, three people at the Hong Kong Productivity Council, who will be working full-time on the implementation of MINISIS.

It's very difficult to provide you with an absolute budget figure that has been allocated to this activity because of the way our operational budget is set. We have received from our Centre management, an additional, $250,000 to cover the production of documentation, acquisition of additional hardware and to pay travel costs to ensure that the developers from both the Hong Kong Productivity Council and IDRC meet on very frequent basis, and to cover telecommunication costs, acquisition of compilers etc. In terms of the allocation of resources, we are now in the process of acquiring a micro HP3000-XE which will be dedicated to the development of Version

QUESTIONS	RESPONSES
qu'avec la puissance des machines de la gamme risque de Hewlett Packard la puissance de la Version H, il serait tout à fait possible aux utilisateurs de MINISIS à l'horizon de plusieurs années de prendre en compte des bases de données en texte intégrale ou tous les mots seront inversés. Ils ne pourront les exploités que si ils ont des opérateurs boulliens beaucoup plus fins que les seuls opérateurs actuellement disponibles. Et, par ailleur, un peu plus large que le réducteur de distance adjacence. J'ai fini.	H of MINISIS. So we feel fairly comfortable with our resources that we have available to us and expect that we will be able to meet that deadline.
(Unknown): Terry, on Monday we went through a list of features for Version H, some of which may or may not be included on the Version for 1990. I guess my first question is do you have a list of the features that will be included for 1990 and that kind of leads to my next question: will the version to be released in 1990 be totally backward compatible in functionality with Version G that we will be using. In other words, will we be able to do the same things that we're doing today on the version in 1990.	(R. Lee): The answer is yes, but maybe the user interface will be different for on-line session and as far as the features, everything will be retained in Version H. I think everybody always feels flattening is always a problem in the system. We are still debating whether we will support flattening under Version H or not. We would like to hear more from users about the flattening problem.

QUESTIONS	RESPONSES
(Same previous speaker): Can you be more specific on the features that will be available on the list that you gave out on Monday.	(R. Lee): As I mentioned earlier, the Applications Development Tool will be available on Version H. Maybe we can discuss our features. The relational data modelling will be the backbone part of the system. The number of fields and the field-length and the record length will be unlimited. Additional data type will be supported but initially Version H will not be able to handle graphic data or sound. Support of referential integrity, may not be found in the initial release of Version H. We also will support data view update and the rollback recovery in Version H. The SQL style of DDL and DML will be supported. DML will be supported in the initial release of H and DDL will be added later on. The form system of the Version H will be very simple, most likely it will be just an interface from the host computer. We don't plan to write our own form system for the Version H of MINISIS. As far as the user interface users will be able to interface with MINISIS in either command mode or menu mode. The command interface may be a little different from Version G, and also the help system will be part of the user interface. As far as working with the mouse or touch screen, you will not find in the initial Version H. The wordprocessing capability will not be supported in the initial Version H. Numeric computations will be supported but not integrated with either a statistics package or any graphics package. For the ReportWriter, the print format language will be made available in command mode and menu mode. Ad hoc reporting will be made available throughout the system. The text processing capability and interface to a graphics package will not be included in the initial Version H. Of course the ReportWriter will be part of the core system of Version H.

DataDictionary will be operated in command mode and menu mode. Under Version G you can only create/edit a database definition through menu mode, however, Version H will let you manipulate a database definition in both modes. In order to support the DML of SQL. Version H will be extended to support the dynamic join. As far as interfaces to other DBMS, we already have it in Version G through the user-defined data structure. It will be integrated as part of the Data Dictionary instead of something sitting outside of MINISIS. This means Datadict will capture all the mapping information when users define a user-defined data structure. However, the user will still have to write their own interface to other DBMS. As I said, new data types will be supported in the initial Version H. Version H will support both the central Data Dictionary and the local Data Dictionary and the notion of array. The system will come with the system configurator which allows the user to select features. The resouce usage will and database usage will be logged in Version H. A QUERY statistics system will be part of Version H. The support of MARC will be part of the core of Version H and it will not bne a shell around MINISIS. Because users will work with a single integrated processor, the on-line interface will be slightly different from Version G.

I already mentioned that the Applications Development Tools will be included in the initial release of Version H. Finally, Version H will be functional comparable to ISIS family of software, including Version G of MINISIS.

QUESTIONS	RESPONSES
(F. Leemreize): Terry, I have some additional questions on the question of Bob. From this we know that we have sometimes run different versions of MINISIS because there are sometimes two of the MINISIS not working in the right way. It happens. What I am worried about that we have to go to Version H and cannot stay in Version G for a part of an application with an acronym (??). So how is that going to work out? Well, I'll give you an example: we have still an old version of SDI because it doesn't work in the new version of MINISIS.	(R. Lee): As I mentioned Monday, there will be conversion on data and we will extend the Version G expiry date one or more years if you want us to. As far as the applications, I don't know how your applications are defined in your organization, you may gradually convert some of your applications to Version H. If you have several applications in shared data files, you may have a problem.
(F. Leemreize): I think we'll have a lot of problems then, and I think you should know that before Version H comes. There's no way back I think.	
(Unknown): I don't know that our problems are as serious as Franz is, but one of my concerns is I think has been passed several times around the table this morning. It includes the future of the user-contributed library, and I think you've addressed part of the issues by saying that you continue to support the high level intrinsics that are supported in Version G and Version H. But I think there are a number of installations that are using various aspects of the user-contributed library that won't be able to fully test those contributions until Version H is available and depending on how extensive the implementation of those modules is, it may be quite some time, depending on how smooth Version H goes, when it is released and implemented before these MINISIS installations will be able to leave Version G to Version H.	(T. Gavin): Just one comment about the contributions in the user-contributed library. They fall into several categories. There's one, such as MARC exits and menu drivers which we hope will become part of the standard package. The others are ones that we, as users of the software, should be asking the developers of those user-contributed library contributions to start looking at making them compatible with the high level intrinsics so that it will be easier for all users to migrate to Version H using those contributions when it comes.

QUESTIONS	RESPONSES
(2nd Unknown): What you said about taking over features which are now in the user-contributed library into MINISIS means that these features are implemented in 60 different ways in 60 different places in the the world. Can they be replaced by one function within MINISIS?	(T. Gavin): No, but we're looking at how do we generalize. As an example, there are what, four menu drivers in the user-contributed library. That tells us very strongly that there is a need for that type of function in the MINISIS software. There are several examples like that, so what we want to look at very seriously is how can we generalize those so that they can be adapted easily to other organizations.
(2nd unknown): I just see it from the user's point of view who have now have a system where they work with and what they like. What happens when Version H comes? Do we have to make another application for these users, or can we construct the same applications for these users?	(R. Lee): IDRC will provide users with a set of generalized applications which are functionally compatible with the Version G generalized processors. On top of that we will provide a language to develop a specific applications for the users who have special requirements. Features of the menu driver, which you will find in the user-contributed library will be incorporated into the Application Development Tools. Hopefully we won't have to incorporate all the features with the menu driver which you will find in the user-contributed library.
(R. Simonde): Oui, Ronald Simonde de Total France. J'ai plusieurs points à évoquer. D'abord, pour ce qui des recherches sur clé, j'aimerais savoir si ça serait possible d'avoir une troncature à droite et à gauche. Actuellement on peut tronquer à droite par défaut. On peut éventuellement faire des recherches en demandant de constituer des biteries avec troncature à gauche mais on peut pas faire les deux en même temps. Et pour les gens qui ont l'habitude de chercher des fichiers sur MVE ils savent qu'ils peuvent toujours tronquer des fichiers des deux côtés et c'est toujours un peu choquant d'avoir des limites au niveau de MINISIS.	(R. Lee): I think, actually, it's the left-right truncation on a key. We plan to include this searching technique in Version H. The Data Dictionary will provide the capability of creating your own job for generating database statistics. The one you saw in demo was set up by IDRC. By all means, you can set up your own jobs. (T. Gavin): With respect to the participation of others in development of other hardware versions of the MINISIS software, I think that we want to leave the door open to discussion with anyone who would be able to work with us in implementing those different hardware versions. However, there will be limits, in that we want to ensure that the MINISIS software will be available under the same terms and

La deuxième point: c'est que j'ai vu dans la Version G une commande très interessante qui permets d'avoir une listing de tous les biteries qui sont attachés à une base de données. Mais ça me donne en faite que la structure des fichiers inversés. Est-ce qu'il ne serait pas possible d'avoir en faite en une seule commande pour une base de donnée choisie le contenu un moment donné de tous ces fichiers inversés. Ça éviterait pour le gestionnaire d'application d'aller regarder tous les fichiers un par un en choisissant ? à la fonction inverte.

Un troisième point qui intéresse les utilisateurs français. C'est de pouvoir tester dans le module EDITION par rapport à des chaînes de charactères à part du texte. Actuellement on peut tester par rapport du chiffre, ça marche bien, mais on peut pas comparer par rapport aux chaînes de charactères.

Et enfin, je veux revenir sur ce que disait mon collègue tout à l'heure du Sénat. Quand vous parliez de participation de sociétés extérieures au développement de la Version H, est-ce que vous envisagez de mettre des limites ou est-ce que ça sera ouvert également, éventuellement à des constructeurs ou bien des sociétés de services?

Et enfin, pour terminer, si je ne suis pas trop long, est-ce que l'opérateur phrase dont il parlait également sera disponible sur la Version H.00, ça veut dire la toute première?

conditions to our primary user community, i.e. those in developing countries, as it is now. So, that will certainly have to be a major consideration in our collaboration with any other users or organizations in developing other hardware versions.

QUESTIONS	RESPONSES
(Unknown): Terry, with regards to just the very last point you made, I'm still going back to this problem of making MINISIS available on other hardware. Have you formulated a plan whereby the hardware manufacturer and the interested parties would be able to work at the same time as you're currently working with Version H or are you going to wait till a first release of H is out before you allow the other manufacturers to go in and put their plugs into it.	(T. Gavin): As I indicated in response to one of the other questions, we want to ensure that we have the specifications finalized and have been able to identify those parts of the software that can be considered to be part of the common or core system and those parts that can be part of the machine-dependent aspects.
(??): If I remember from what you said on Monday, you're looking on having those specifications available sometime early in 1989.	(T. Gavin): That's correct.
(??): So, presumably, after that point a hardware manufacturer could approach you and say let's work together and perhaps at the same time as you're developing H for the spectrum series, they could be also working with you to develop it for other machines.	(T. Gavin): We can certainly start our discussions at that time.
(??): Okay, thank you.	
(T.K. Johnson): Tony Kopp Johnson from the National GeoScan Center. David Reed has asked me to ask this question. He's a little concerned about the incompatibility of block mode transmission with X.25 networks like DATAPAC and what effect it that's going to have on people who must use the networks to access Datadict which I believe is block mode access only. How are we going to accommodate the people who require character mode transmission in order to get there.	(B. Swift): Recently we just tested out trying the Datadict, the full screen block mode entry as well on the DATAPAC. I guess what we'll have to end up doing is talking a bit with HP, there is some options with the Multiplexer that allow you to do block mode transmissions and that. We were not successful at the time at doing the block mode transmission. We tried different terminals types, etc., different parameters on DATAPAC. As I said, I think we'll come down to just talking with HP and see what we can do about, because it does seem possible that we were unsuccessful at getting it going.

QUESTIONS	RESPONSES
(L. Calvot): Lydia Calvot, L'Interprofession Laitière Française. Je voudrais...tout à l'heure vous avez parler d'une version micro de MINISIS, pourriez vous nous indiquer la date? Et par ailleurs, je voulais savoir si c'était possible d'obtenir un échéancier plus précis concernant la Version H? Merci.	(T. Gavin): Our current plan is to have Version H.00 for the HP3000 released at the end of 1990. So we're looking at November/December 1990 for Version H on the 3000s. If our developments go according to our plan, then I would hope that within 9 months from that we should have a version that operates successful on larger micro computers.
(Jim): Would the micro version be based on OS2 or DOS?	(T. Gavin): DOS
(??): Relating to that effect, what kind of processor 286, 386, or all processors.	(T. Gavin): 286 is a minimum.
(C. Tazi): M. Chakib Tazi du Conseil Arabe à L'Ordre de la Justice. Je voudrais savoir si vous prévoyait en niveau de la fonction Définition les base de données pouvoir subdiviser des sous-zones la Version H. Outre le fait que c'est un des éléments qui charactérise le système de gestion des bases de données relationnelles, les possibilités actuels contre MINISIS pour détourner ce problème et de rattacher le zone sujet à un sous-zonage, à être rattacher à un PS où l'enrégistrement constitue de zones qui lui sont directement rattachés et qui constitue ces sous-zones et cette possibilité quand on regroupe les deux bases de données au niveau DBMS, offre sur le plan de recherche sur texte libre une lenteur incroyable par rapport à une recherche sur une allée. Merci.	(R. Lee): Free text access is always slow, because the system has to examine every character in the string. Well, we'll try to speed it up in Version H. (T. Gavin): Perhaps, Mr. Tazi, if we could talk to you afterwards about the specific details of the situation you're trying to describe and we'll be able to give you a more specific answer.